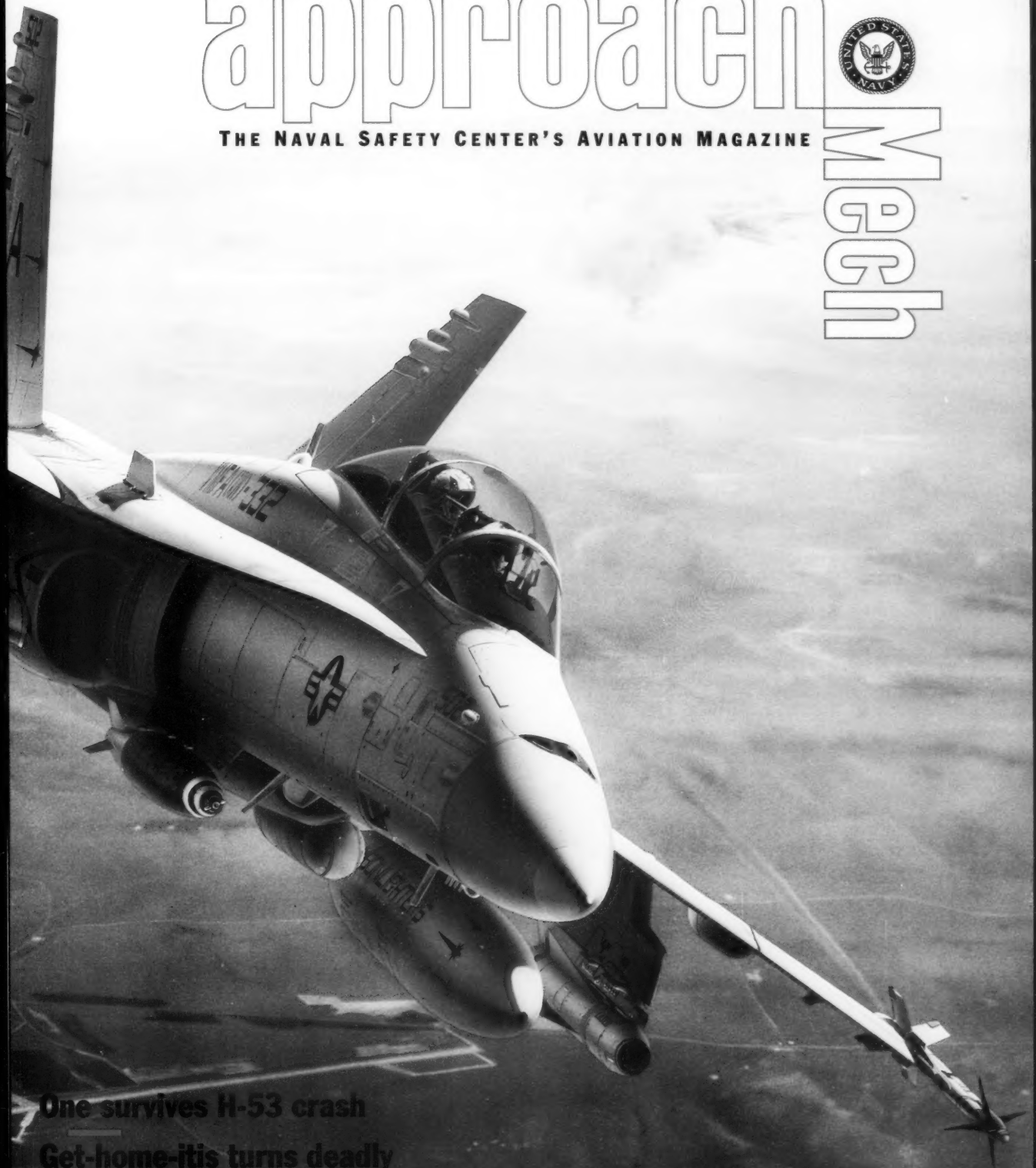
March-April 1996

approach

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

Mach



One survives H-53 crash

Get-home-itis turns deadly

Laser shows threaten your eyesight

March-April 1996 Volume 41, Number 2

approach Mech

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

On the cover: "Moonlighters Over Ubdina"– VMFA(AW)-332 Hornets attack an airfield in Croatia on November 21, 1994. *(Artist: Mark Styling)* Print information can be obtained by writing the artist at: 7201 Stamford Cove, Germantown, TN 38138.

RAdm. Frank M. Dirren, Jr., Commander, Naval Safety Center
Bill Mooberry, Executive Director
Cdr. John G. Mahoney, Head, Media and Education Support
LCdr. Ken Skaggs, Editor
Joe Casto, Assistant Editor
Peter Mersky and Bud Baer, Associate Editors
Laurinda Minke and Frank Smith, Design and Layout

Address comments, contributions and questions about distribution and reprints to: Commander, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399,

Attention: *Approach* — Code 71
Tel. (804) 444-3520 ext. 7245
DSN 564
e-mail: edapprch@tecnet1.jcte.jcs.mil

Attention: *Mech* — Code 711
Tel. (804) 444-3520 ext. 7247
DSN 564

Approach Mech (ISSN 0570-4979) is published bimonthly by the Commander, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399. *Approach Mech* contents should not be considered directive and may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. Views expressed in guest-written articles are not necessarily those of the Naval Safety Center. *Approach Mech* is available for sale by the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Subscription price: $15 per year. Telephone credit card orders can be made 8 a.m. to 4 p.m.Eastern time at (202) 512-1800. Second-class postage paid at Norfolk, VA and additional mailing offices.

• **POSTMASTER:** Send address changes to *Approach Mech*, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399.

DEPARTMENTS

2 **Lessons Learned**

3 **Pop-ups**

30 **Bravo Zulu**
Approach: VAW-124, VT-7, HMLA-169, HMLA-367 *Mech:* VRC-40, VMFA-122, VA-52, HMM-266, VFC-12, VQ-6, VMGRT-253, VR-52, VFC-12.

***Air Wing:* Where Does a 500-Pound Buzzard Fly?** (tear-out bulletin and poster)
A heads-up on bird migration around the Persian Gulf. The map on the back identifies the routes. *Joe Casto*

41 **Crossfeed**
Straight talk from maintenance specialists on: Supervision, ALSS, Line, Maintenance Management, Ordnance.

APPROACH FEATURES

4 **Am I the Only One Left Alive?**
It started out as a good-deal, big-formation flight. When it was over, one helicopter had crashed, three crewmen were dead, and a JO had a nightmare to remember forever. *LtCol. James M. Leavis, USMC*

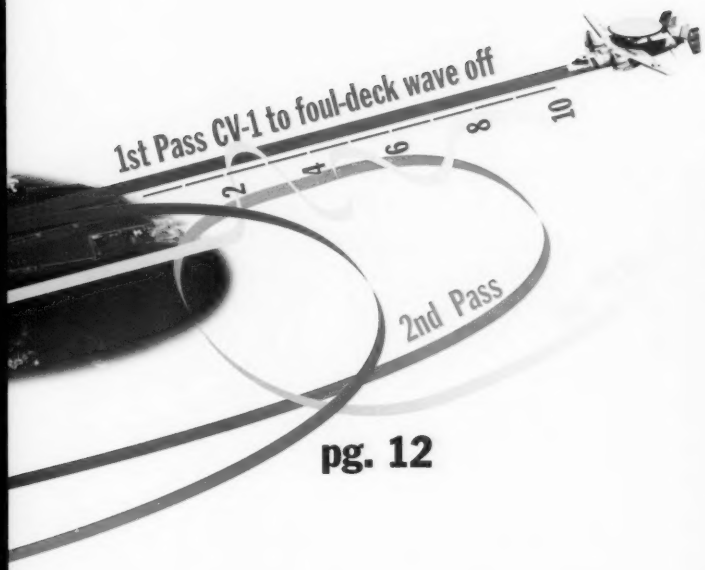
8 **The Pressure of the "X"**
A quickie preflight and a loose canteen nearly "cancels" this flight. *Lt. T.S. Redford*

10 **Bird-Gut Soup**
An A-6 on roll-out, a huge flock of birds by the short-field gear, and two aviators make a repulsive recipe. *Lt. Derek Murphy*

12 **Care to Hummer Dance, CATCC?**
This E-2 crew's card was full, but CATCC insisted on three turns around the pattern. *Lt. Andrew G. Mortimer*

14 **Two T-2 Tales**
Two Class A's and two dead instructors. *Peter Mersky*

17 **Why Are Those People Pointing at Us?** The rescuers need help remembering their pre-landing checklist. *LCdr. C.W. Laingen*



pg. 12

pg. 40

MECH FEATURES

18 **So, Let Me Get This Straight– High Body Fat Is a Good Thing?**
Studies show that thin people have a reduced survival time in the water.
Capt. Greg Pachman, USAF

21 **My Most Harrowing Experience**
During an ordnance delivery hop, the pop-up immediately gets this Hornet JO in trouble.
Cdr. G.R. White

22 **Snow in the Red Sea?**
Shredding paper will not endear you and your crew to the commodore. *Lt. Gregory Schwaiger*

23 **Was That the Right CB?**
So many CBs, so little time! *Lt. Mark Black*

24 **New Format for Weather Reports**
METAR explained. *AG1 John V. Klimas*

26 **An ORM Primer**
Examples of poor risk management highlight a discussion of this new technique.
Cdr. Kathy Ozimek

28 **Making Money**
ACT in single-seaters. *LCdr. Tom Ganse*

34 **Does Dark Gray Mean Danger?**
Don't stand in line with the vertical stripe on a Tomcat's aft fuselage when the engines are running. Turbine buckets coming apart can put holes in you like shrapnel. *AMH1(AW) T.L. Webb*

35 **My Time as a Tumbleweed**
Prop wash won't get you clean, but it can make you fly. *Lt. John A. Tekverk*

36 **It Picked Me Up! It Picked Me Up!**
If an observer gets sucked into an intake during a high-power turnup, his longevity depends on the man in the cockpit. *LCdr. Tom Ganse*

38 **Eliminating Environmental FOD**
Ramps that feel like very rough wash-boards, when you drive over them, discourage FOD ashore. *LCdr. David Kriegel*

39 **Tough Decision**
Final checkers are two-legged insurance policies. *AE3 Shane M. Rassel*

40 **The Catwalk Broke My Wrist and My Fall!** If you don't keep your head on a swivel, the flight deck will get you.
ATAN Adam A. Nydam and AE1 D.J. Marshall

LESSONS LEARNED

There are two ways to get smart. One is through experience – we call this "the hard way." The other is to learn through others' experiences. The second method is much easier on our machines and bodies. Most of our lessons relate to human error. The authors are stationed at the Naval Safety Center, unless otherwise indicated.

Big-Sky Theory Is Still a Theory

An MH-53E crew was descending from 6,000 feet after completing fuel-dump checks as part of an FCF requirement. They were VFR in VMC in Class E airspace, so they were not "required" to be talking to ATC and elected not to request VFR advisories. Both aircrewmen in the back were posted as lookouts before the descent.

A Cessna 172 was nearby on a VFR flight plan, flying a level, left-turn, race-track pattern while doing commercial fish spotting. Approach was giving the 172 VFR advisories but did not mention the H-53 in the same vicinity. The helo and the light plane collided at 3,000 feet.

The H-53 made an emergency landing, but the Cessna was destroyed. The helicopter crew didn't see the Cessna until just before impact. Evidence indicated the Cessna's pilot was looking down and aft when the aircraft collided. Since the pilot made no evasive maneuvers, it was doubtful he ever saw the H-53.

Lessons Learned:

1. Use radar advisories. Although the rules don't require it, radar advisories while under VFR are your best tool to avoid other traffic.
2. See and avoid. Radar advisories can't replace a good outside VFR scan. The 172 pilot was fixated on the task at hand (fish-spotting) and relied on ATC for separation.
3. Know your airspace. Although in Class E airspace, the aircraft were operating near an IFR feeder route to a major airport. All the more reason to use ATC for advisories.
4. Note that the first three lessons all relate to detecting hazards, the first step in risk management. The mishap crew didn't take advantage of all the tools they had for scanning. Result: a lesson "unlearned."

— LCdr. Chris Spain

Big-Sky Theory Disproved

During a night trans-oceanic mission, a Navy crew requested and was cleared for a higher en-route altitude. After reaching the new level, the crew heard a civil transport check in with the same oceanic sector-controller at an intersection they had passed. They did not copy the aircraft's call sign or altitude. However, the crew used radar to confirm a target 75 miles behind them. A few minutes after passing the next intersection, the crew heard the civil aircraft report the same fix, at the same altitude. The radar operator noted the target at 28 miles and closing. They notified the oceanic sector-controller, who seconds later directed them to descend.

During their descent, they switched from red to white anti-collision strobe lights. Almost immediately, they heard the other aircraft report an unknown plane ahead. One minute later, the crew watched in amazement as an airliner passed overhead. The airliner was using commercial cell-call (a device that triggers the receiver and alerts the crew that ATC is calling), which prevented its crew from hearing other traffic calls. Whether the airliner had a traffic collision avoidance system (TCAS) is unknown.

Lessons Learned:

1. ATC stands for "air traffic control" but does not guarantee it. The oceanic sector-controller misinterpreted his strips and did not recognize an altitude conflict. This crew demonstrated outstanding SA.
2. Solid crew coordination with radio-monitoring discipline, even during those often boring transit flights, pays big dividends. In this case, employing ATC improved the overall SA of the threatened flight crew and clearly averted a midair collision.
3. Operational risk management applies here. Identifying potential hazards en route and applying concise controls will reduce midair collisions. Perhaps the community will push for a collision-avoidance system, which will electronically improve the SA of a crew that, for fatigue or other reasons, is not aware of other traffic in the "big sky."

— LCdr. Dave Morton

ORM • Cold WX Gear • Rosy Roosey What a Relief • Laser-Light Hazards

ORM in a Nutshell– Operational Risk Management (ORM) is a priority item on the Naval Safety Center's agenda.

"I believe ORM is the next major breakthrough, not only in safety, but in efficient management," said RAdm. F.M. Dirren, Jr., Commander, Naval Safety Center. "It can be a mindset that allows leadership to better assess and control risk, which has proven effective in industry and the military."

The principles of good ORM can be taught more effectively when they are applied throughout the Navy and Marine Corps under a standard approach. The Safety Center, in coordination with CNET and NAVDOCCOM, is working to accomplish this education. ORM guidelines include:

- Use ORM in planning (that's when you have more flexibility in implementing controls).
- Accept no unnecessary risks. You don't know what risks you're accepting until you've thoroughly evaluated them.
- Make risk decisions at the proper level. The greater the risk, the higher in the chain of command the decision should be made.
- Accept risk if benefits outweigh cost. ORM does not eliminate risk... it just helps us to control or deal with it better.

"Our entire safety program is an example of risk management at work; Operational Risk Management takes a proven safety process and applies it to the operational environment," said Cdr. Kathy Ozimek, who has been named ORM coordinator (804) 444-3520, ext. 7277, DSN 564.

Navy Gets Hot on Cold-Weather Protection– The Naval Air Warfare Center, Warminster, has expanded its effort to keep Navy and Marine Corps aircrews warmer this winter.

The Center's Aircraft Division is developing new technology items and investigating off-the-shelf, non-developmental items.

A review of current off-the-shelf technology included a market survey and an agency announcement. The market survey identified cold-weather boots, anti-perspirant foot spray and powder, slip protectors to cover the sole of the boot, socks, water sealants for boots, liners for cold-weather jackets and trousers, gloves and hoods for winter protection.

Lab technicians tested the items for garment insulation and flammability. During recent cold-weather operations, helo, TACAIR, patrol and cargo squadrons tested the items to see if they were compatible with their aircraft, suitable for operations and the right size.

More information on this program is in a COMNAVAIRSYSCOM 160811Z Nov 95 message, and is available from Tara Capecci, (215) 441-3189, DSN 441-3189.

Roosey Not So Rosy– "Hey, where did all these bug smashers come from?" Welcome to Puerto Rico and two fabulous fun-filled months in the Caribbean.

At first glance, flight operations around NAS Roosevelt Roads appear to be fairly docile. Yet, shore-based ops are loaded with pitfalls that can ruin your day if you don't give them the same attention as embarked ops.

Chances are you'll encounter a small civilian aircraft at low altitude on the way out or back to station. As always, the terminal phase of your flight is usually the most interesting because the hilltops around Roosey are often covered with clouds.

Just because you land safely doesn't mean the battle is over. Numerous transient aircraft of varying sizes (Cessna Citations to C-5s) are to be avoided on any given night. Embarked ops have a way of keeping us on our toes. The same mindset needs to be applied to shore-based ops.

What a Relief– New constant-wear relief systems are now available through open purchase. Four different styles feature an odor-neutralizing absorbent material or gel that move the urine away from the skin. All can be used by women and three are suitable for both men and women.

They have been approved for use in all aircraft. A brief description of the different pads or undergarments and open purchase sources are in COMNAVAIRSYSCOM 082003Z DEC 95. This message can also be seen on the Test and Evaluation Community Network (TECNET) ALSS Bulletin Board.

The flight clearance expires December 22, 1997, or upon incorporation into RAC 34 of Aircrew Systems Manual (NAVAIR 13-1-6.5), whichever occurs first. Points of contact are H. Williams at Warminster, DSN 441-2688 or J. Stein at NAVAIR, PMA 202E, DSN 664-4480 ext. 7348.

Outdoor Laser-Light Shows Can Be Hazardous– While flying at 31,000 feet 90 miles south of Las Vegas, a pilot pointed out a laser-light show to his copilot. A green laser hit both aviators in their eyes, resulting in a green glow around the periphery of their vision for about 10 minutes.

In another incident near Las Vegas, a laser struck both the pilot and first officer during takeoff, blinding them for about 10 seconds. Besides several commercial airline incidents, there have also been a number of reports of this hazard by the Air Force, primarily because Nellis Air Force Base is so close to Las Vegas. In one of these incidents, one of the pilots of a C-130 was blinded for 15 seconds.

As recently as October 30, 1995, a Southwest Airlines first officer was temporarily incapacitated when he was hit by a laser beam while climbing out from McCarran International Airport at Las Vegas. He had to ask the captain to take control.

The situation is likely to get worse. The probability of lasers affecting Navy aircrews is increasing because laser-light shows are gaining popularity. They are now seen at theme parks, fairs and concerts. Since Class 4 (the strongest category) lasers are used, retinal damage is possible, but considered a minor threat. However, the more likely concern is flashblindness or dazzle, which makes pilots lose situational awareness or become unable to read cockpit instruments.

Aircrews can find out where all permanent laser light shows are by checking the *En Route IFR Supplement* and the *Airport Facility Directory (AFD)* for locations, dates, duration and eye-safe distances for approved displays. Pilots can also check NOTAMS, but laser-light shows are listed as L (Local) class NOTAMs, and may only be disseminated by ATIS transmissions or through the local flight service station.

Avoid flying near laser-light shows. If you encounter a bright beam, don't look at it. Finally, make a last-minute check with local flight service stations to see if any new shows are operating after the publication of the above *AFD*.

Am I the Only One Left Alive?

by LtCol. James M. Leavis, USMC

As I drove to the base on this beautiful Southern California morning, I was excited. Two months earlier, I had been designated an H2P in the CH-53A/D. The reason for my high spirits was that we were deploying to San Clemente Island with 10 helos to support the 5th Marines during their combat-readiness evaluation.

I had been doing my copilot duties, striving for precision...

I had flown a few FRAGS during the last month, and the sense of power I got from completing those simple tasks made me want more. Today, I was about to take part in a 10-plane lift, the largest number of 53s I'd seen launched at one time. I was also copilot to the mission commander, flying in the lead aircraft.

I liked the major I was flying with. I was still very rank conscious since I was only a few months out of Pensacola, where captain aviators were treated with awe and reverence. To me, anyone above the rank of captain should not have been approached by a junior officer.

I discovered he was friendly and showed a genuine concern for us copilots and our training. He had recently transitioned from A-4s after three years out of the cockpit as an instructor at a military academy.

We kicked off our brief on time, broke down the flight into sections, then finally into individual crew briefings. The major and I discussed some peculiarities of this morning's lift, and then he went into a lengthy emergency-procedures discussion. I listened to the same NATOPS items that I'd heard dozens of times, and noted no differences. Then, we walked to maintenance control, screened the book, and the copilots were dispatched to begin the preflights.

We had to shut down on our first attempt, to replace an Nr tach generator. We were going to be delayed a few minutes and the major told our wingman to take off without us. The 10-aircraft launch had been broken into five sections, and each section was staggered by 15 minutes.

Troubleshooters replaced the bad tach generator in minutes. We began to make our way through the start and run-up checklists, this time without any glitches. The HAC called for taxi, and we launched as a single aircraft.

Once we entered military airspace over Camp Pendleton, we checked in with range

control to see if any of the ranges were hot. They cleared us down the coast at 2,000 feet. Somewhere near Pulgas Canyon, they passed us to Camp Pendleton tower, and I reported in.

I had been doing my copilot duties, striving for precision, but looking to the right seat for approval of my every action. I told the HAC I was going to start the descent from 2,000 to 1,000 feet to be at the proper altitude for the MACS 7 check-point and entry into Camp Pendleton's pattern. He acknowledged, and I lowered the collective slightly to begin the gradual letdown.

It was at this point that our day turned into a nightmare, and my life changed forever. I felt or heard something snap somewhere in the aircraft. The helicopter immediately rolled left-wing down 10 to 20 degrees, and the nose dropped 15 degrees below the horizon. A yaw to the right quickly developed, which I countered with more, and finally full, left rudder and aft-right cyclic.

I told the major in a strained (but what I hoped was professional) voice that we had a "catastrophic tail-rotor drive failure." He responded coolly that he had the controls. I told him that we had to enter an autorotation, and he responded with a call to "relax and secure the yaw servo."

I glanced out my window. The roll was becoming more severe at nearly 45 degrees, and the aircraft was now 20 degrees nose-down and yawed almost 45 degrees to the right. I was terrified. Fully aware that our lives were in danger, I decided to do my copilot duties. Bracing against my side window, I pulled myself uphill by grasping the right side of my seat to reach the center console. I reminded the HAC once more that he needed to autorotate as I punched off first the AMP and then the yaw servo. No more than 10 seconds had elapsed since I'd relinquished the controls. Almost simultaneously with the securing of the yaw servo button, the aircraft started rolling to the left, becoming completely ballistic.

The helicopter was rolling rapidly along its central axis while spinning right around the center of gravity. I was thrown against my window once more, and while the helicopter tumbled wildly, I saw the crew chief and the first mech trying to brace themselves in the open crew door. They couldn't hold on and both spilled out.

I turned back to my instruments, convinced that my crew was gone. I checked the collective and noted that it was full down. All the caution lights were flashing at the completion of each roll, but other than that, the gauges appeared normal. Something behind me was thumping rhythmically, and my attitude gyro spun freely in a vain attempt to follow the aircraft's erratic motions. I lowered the landing gear and transmitted a frantic "Mayday!" to Camp Pendleton Tower. After that, I told the major that I was going to try to secure the engines. He didn't answer, so I assumed that he concurred with that decision.

Our day turned into a nightmare, and my life changed forever.

Adrenaline was pumping wildly through me. I was completely lucid, maybe for the first time in my life, but I couldn't fathom why this was happening. I understood what the initial indicators told me, and passed it on to the HAC. It was clearly a drive-shaft failure, but why were we rolling? NATOPS said nothing about this. I believed I was going to die as I watched the ground rush up at me.

A disjointed thought raced through my mind: I hoped that dying wouldn't hurt too much and prayed that it wouldn't be by fire. I used all my strength to haul myself back across the cockpit and allow my hand to fall back onto the speed-control levers. The

lateral G's were enormous, and the simple act of lifting my arm was beyond me. My hand found the speed-control levers, and I tried to haul them aft. I was unsuccessful at first, because there was a foot in the way. This too, made no sense because the crew was gone, ejected a few seconds before. I found out later that the crew chief and first mech had both been on gunners' belts. They climbed back into the aircraft after a few terrifying seconds suspended in space.

The rolling stopped suddenly after six complete turns, but the aircraft was spinning at a sickening rate. I continued to provide essential information such as altitude and airspeed.

We were now below the ridge line. I was able to keep my reference on a lone scrub oak adorning the otherwise barren crest. The Nr increased to 125 percent, and I contemplated raising the collective a bit to bring it down, but the major was at the controls and surely he saw that. Besides, the rolling had stopped, and I was afraid that if I brought the Nr down, the rolling might start again.

I lowered the landing gear and transmitted a frantic "Mayday!" to Camp Pendleton tower.

We were falling straight down, and the radar altimeter was giving me pretty stable readings. I read out each hundred feet below the 500-foot AGL limit as briefed and expected the HAC to flair the helo at around 150 feet.

I started to think that I was the only man left alive in the helicopter. I'd seen the crew dive out the door, and the major hadn't said a word to me since he told me to turn off the servos. I glanced over at him a time or two and saw his hands were still on the controls, but why wasn't he talking to me? I was chattering up a storm. The least he could do was acknowledge me. I also couldn't figure out why we weren't complying with NATOPS. We should have entered that autorotation immediately, but we took a few precious seconds fiddling with the yaw servo, an action that, even with only 320 hours, I knew was not related to our emergency.

I was still absolutely terrified. I began to suspect the HAC was dead. I watched as we plowed through the altitude at which we should have started our flair and moved my left hand to the collective as I continued my altitude litany on hot mike. My right hand was still on the speed-control levers so I wrapped my knees around the cyclic to keep it somewhat steady and, when the radar altimeter read 50 feet, I pulled the collective full up to the stops. The helicopter hit the ground very hard but flat, made a quarter turn to the right and came to rest.

Debris hit me and forced me to turn my head to the right in time to witness the pilot's seat explode from its moorings and exit through the overhead green-house window. I remember being awed by the sight, thinking that it looked like an ejection. The rotor blades struck the ground at the one o'clock position, broke up and crashed through the right side of the cockpit and shrapnel hit my helmet. Some of this debris cut off my right ear cup. I looked at my right hand, wondering why it no longer responded to my demands to secure the speed-control levers, which were turning the now-bladeless rotor head at ground idle.

The impact had broken my arm above the wrist. Things were serious, but I was alive and pretty much intact. I told myself, "It's time to get out of here!"

Unstrapping, I turned right to exit by the crew door, but a fireball forced me back into my seat. Something had flashed. Sitting back in my chair, I covered my mouth and nose with my gloved hand and waited until the fireball subsided, and then I must have exited the aircraft.

What happened after the flash fire is still a mystery to me. I do not remember a thing up to the point that a nurse broke through the mental barrier I'd erected. I had burns on the back of my neck and head

where the seat belts ran through the armored seat, but I had no recollection of exiting the aircraft. The AMB told me I had popped out my window and that my boot prints marked where I'd jumped free. I'd never practiced an egress drill from this aircraft; I was amazed that I'd found the egress handle in the smoke and flames.

I remember, almost dreamily, a nurse in her whites talking calmly but insistently to me, saying, "Let them go, lieutenant, we can't help them." I was in shock, and it took a few seconds for what she was saying to register. I looked at my hands, and I was hauling two people by their harnesses from the burning aircraft. One was dead, and the other was bleeding profusely from his nose and mouth. I put them down gently and wandered around the wreckage searching for the aircraft commander.

After leaving the aircraft initially, I had made my way some distance from the helicopter, deposited my helmet and kneeboard in a neat pile, then returned to the wreck where I had somehow managed to drag the crew chief and a passenger some 30 yards. The nurse happened on the scene because she was taking her husband (a gunnery sergeant) to work at Los Pulgas when our ballistic helicopter almost swatted their truck from the road as it passed directly over them. She was at my side within minutes.

She chased me and convinced me to lie down in spite of my protests about locating my crew. I did what she said and was suddenly exhausted. I woke up to find myself strapped into a stretcher and being carried to a waiting H-1 for the short trip to Camp Pendleton Hospital.

I have relived each horrifying second of that flight a thousand times. My inactions were partially responsible for the deaths of three very fine aircrew. If I had entered the autorotation immediately after recognizing the drive failure, the aircraft would have remained somewhat controllable. Instead, I'd relied on the HAC to handle the emergency. He was the first to die. He suffered an aneurysm (a ruptured artery in the brain) almost immediately after the onset of the aircraft rolls. I had truly been on my own. ◄

LtCol. Leavis is the CO of HMH-366.

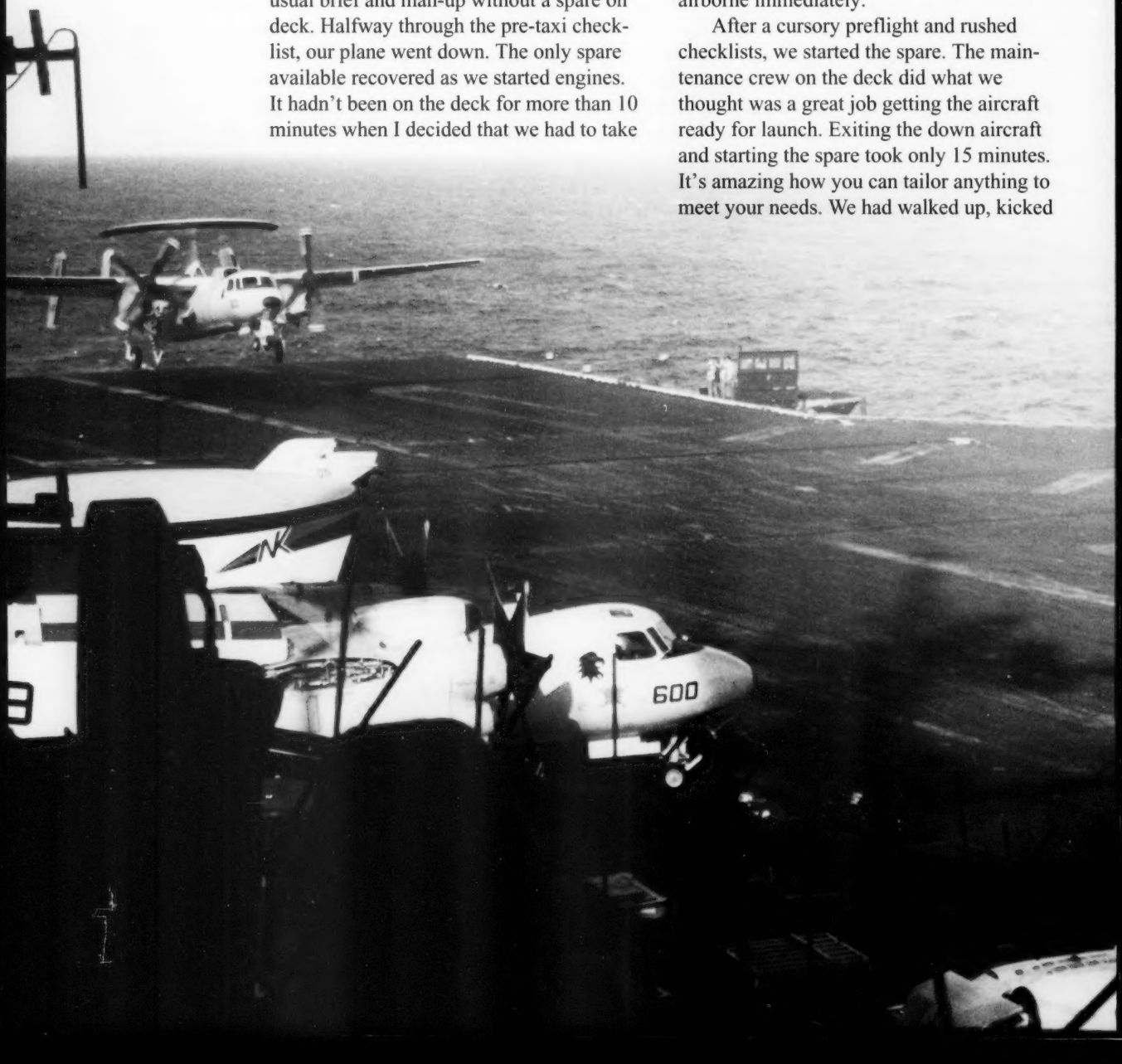
The Pressure

OS2 John Bouvia

Perceived pressure from CENTCOM and high-tempo Southern Watch operations in the Gulf had started to shift our squadron's focus. Getting that sometimes elusive "X" was quickly becoming paramount.

Today's schedule included a late-afternoon launch with a night recovery, the usual brief and man-up without a spare on deck. Halfway through the pre-taxi checklist, our plane went down. The only spare available recovered as we started engines. It hadn't been on the deck for more than 10 minutes when I decided that we had to take the backup just spotted on cat 2 to make the launch. Never mind that the grapes had just turned on the hose, the turnaround hadn't started and the original crew, in a rush, had skipped over their postflight. We were theater AWACS for the mission, and nothing was going to prevent me from getting airborne immediately.

After a cursory preflight and rushed checklists, we started the spare. The maintenance crew on the deck did what we thought was a great job getting the aircraft ready for launch. Exiting the down aircraft and starting the spare took only 15 minutes. It's amazing how you can tailor anything to meet your needs. We had walked up, kicked



of the "X"

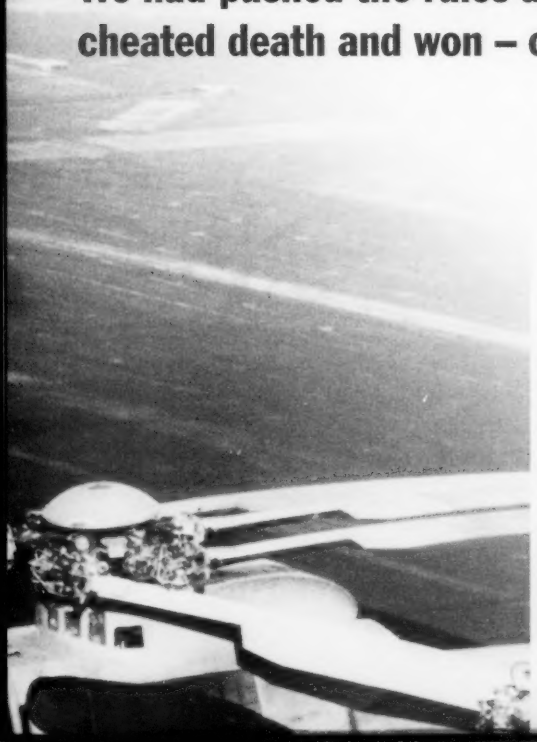
by Lt. T.S. Redford

the tires and lit the fires; something I had been taught from day one of my flying career never to do.

Off the cat, a sigh of relief filled the cockpit as our Hawkeye began the long, slow climb to mission altitude. Nothing had gone wrong. Another mad scramble to get airborne. One more successful "X." We had pushed safety aside, cheated death and won — or had we?

As the airspeed slowed to the climb schedule, I got the answer. I noticed the rudder throw was becoming somewhat restricted. After troubleshooting, the copilot quickly discovered one of the two canteens from the aft-cockpit bulkhead lodged under the rudder pedals. How could we have missed something that big during the preflight? There might not have been enough rudder authority to control the aircraft. We had skipped a lot of the risk-avoidance controls in our rush to launch.

We had pushed the rules aside, cheated death and won – or had we?



He and I kept the incident to ourselves. We didn't feel the XO, our mission commander in the back, would welcome the news that the previous front-end crew, maintenance and our crew had cut corners by skipping postflight, preflight and checklists to get airborne. I remember FDC giving me the A-sheet to sign and showing me the turnaround. My copilot and I were aware that there was no way the turnaround could have been completed. I signed it anyway. I was more concerned about getting off the front end.

After the flight, the copilot declined to accompany me in debriefing the ASO. We talked at length about the squadron's focus on the sortie-completion rate, and how aircrew were accepting substandard practices and cutting corners to complete missions. He wrote a detailed safety report to open the CO's eyes, which it did. After a candid discussion with the JOs, the skipper had the guts to stand up, admit mistakes and change the focus of the squadron.

The carrier is a tough environment. The launch times are hard and fast, and you've got only one shot at the cat, especially in an E-2. We get caught up in the heat of the moment. But when we look back on a chain of events that we allowed to unfold and that could have led to a mishap, we have to wonder if it was mandatory. The answer is, of course, an unquestionable no. Sortie completion rates, the "X," perceived pressure and your squadron's reputation are all important, but there is no scenario short of combat that justifies cutting corners to meet a commitment.◄

Lt. Redford flies with VAW-112.

We took 42 hits, with more than a dozen intact

My pilot and I were scheduled for a typical A-6 sortie in the greater Northwest: a low-level into Boardman bombing range, where we would rain little drops of blue death down on the target of the month. Then, if the weather cooperated, we would RTB via another beautiful Washington low-level. Unfortunately, Whidbey Intruders aren't the only things flying that enjoy the surrounding scenery from a few hundred feet. The bird hazards associated with flying in this area are very real.

On our return, ATIS reported that conditions were basically the same as when we departed: overcast with seven miles visibility, rain and standing water on the runways. I told Approach that we wanted to do an ACLS mode II to a full stop. It started off like any other approach. At about two miles, our controller said Tower was reporting "bird activity" just to the right of the hold-short. I rogered the call. We looked in the area where the birds were supposed to be, but couldn't see anything.

We were now at about three-quarters of a mile and flying the ball. Again, our controller mentioned birds in the vicinity of the runway.

"Roger," I replied, and again we couldn't see any birds. Touching down, we noticed there was standing water everywhere. Our all-weather Intruder, with a little help from the pilot, was doing a great job of holding onto the concrete.

Tower reported a large flock of birds at the short-field gear.

"Well, that certainly gives me a warm fuzzy," I thought. The short-field gear was about 1,000 feet ahead, and our speed was still around 110 knots. As if we had a choice, we continued down the runway.

It happened so suddenly that by the time I opened my mouth it was over. From out of nowhere, a flock of at least 200 birds took off right in front of our airplane! At first, the huge flock flew straight for the side of the runway, away from us.

Just as I thought we might actually get out of this without so much as a scratch, the flock veered, as if on command, back toward us. There was no doubt about it. We were going straight into the middle of the flock!

Although the pilot and BN sit side-by-side in the A-6, the BN actually is located a little down and aft. I always thought this to be an annoying aspect of the airplane, especially during an approach when the attitude of the aircraft makes it hard for the right-seater to see forward. At this moment though, my seat was not nearly low enough as I watched at least a dozen birds come directly at us. I managed to duck behind the instrument panel just as I heard numerous thuds.

by Lt. Derek Murphy

Bird-Gut Soup

bodies still attached.

When I again looked forward, I was greeted by the unappetizing sight of bird-gut soup, plastered from one side of the windscreen to the other. Our airspeed had significantly decreased at this point, which gave me the opportunity to take a look around for any further damage. What I saw on the right wing was equally disgusting; numerous little feathery critters had managed to wedge themselves into every open space throughout the entire surface of the wing.

To prevent any more damage to the engines, we decided to shut down immediately after clearing the runway. I notified Tower of our intentions and reported multiple bird strikes, strongly encouraging them to break out the shovels and prepare for a mass burial.

After shutting down, and while awaiting a tow back to our line, I jumped out to take a quick look. From one wing-tip speed brake to the other, little bird bodies were everywhere. Flaps, slats, speed brakes, landing gear and doors were stuffed full of them. Both engines showed multiple hits, with trails of blood and feathers leading to the first stage; there were even a few birds wrapped grotesquely around the stators.

We ended up waiting for about 20 minutes for our tow, and you can imagine the smell that only intensified as time went on. By the time we finally got back to our line, images of the Shellback ceremony came to mind. Fortunately, no real damage was done. The birds we hit were too small to actually do any real harm. We took 42 hits, with more than a dozen intact bodies still attached. After numerous washings, the aircraft was finally declared clean and safe for flight. To this day, I swear it still smells. ◄

Lt. Murphy flies with VA-196.

Care to Hummer CATCC?

by Lt. Andrew G. Mortimer

An air wing making a Case III, CV I recovery with precise timing, airmanship and controlling is comparable to the choreography, timing and training of a professional ballet. However, there is always an exception to the rule. We experienced a recovery that most resembled the mosh pit at a rock concert.

We were conducting night-refresher operations immediately out of port in the Arabian Gulf. My crew and I were scheduled for a good deal 1+30 single-cycle touch-and-go and trap. Not surprisingly, it was a typical moonless night.

We were the first to push out of the marshal stack and run through our CV I procedures. Everything was moving like clockwork until Approach waved us off for a foul deck. Off the waveoff, CATCC told us to climb to Angels 2 and turn to the downwind heading. On the downwind at 2,000 feet, Approach usually drops the Hummer out of their scan. Fortunately, as we proceeded outbound to seven DME, they gave us vectors to intercept the final bearing. We were in there!

However, it was strictly a tease to keep our attention, and Approach vectored us back across the final bearing to the downwind heading. Bolter and waveoff traffic suddenly shifted CATCC's attention and tempo from a graceful andante to a feverish molto allegro. The big picture and our mighty Hummer were lost in the mix. This marked the beginning of a memorable Hummer dance — CATCC's seemingly random vectoring, making us descend and climb around the final bearing during Case III recoveries to provide spacing for bolter and waveoff traffic. At this point, we realized we wouldn't get our touch-and-go.

As we flew outbound to seven DME, Approach again cleared us to intercept the final bearing. However, we were shortly vectored back across the final bearing. As we crossed it at six DME, CATCC called us to dirty up. Our interval was in the hook at Angels 1.2, directly below us.

With the traffic in sight, we received yet another vector back across the final bearing. CATCC was trying to shake, rattle and roll us! For some unknown reason, they felt compelled to shoehorn us into this minuscule interval. Once again, they sent us back across the final bearing and cleared us to descend to Angels 1.2. Presently, we were flying night form off our close interval in a tactical spread — refresher CQ and a night-form fam.

Dance,

Inside of three DME, Approach told us, "Discontinue Mode III approach. This will be a surveillance approach. Take Angels point six."

As we looked out the right windscreen at the boat and our traffic, my copilot and I realized the total absurdity of Approach's instructions. However, we continued with the varsity play for interval, making an aggressive correction for lineup. Astonishingly, we called the ball at three-quarters of a mile. No chance, paddles. Wave off! Foul deck! With the fire of red lights burning in our eyes, we waved off in the middle. As you can imagine, we were quite frustrated with this handling of our recovery. Luckily, we still had tons of fuel. For the grand finale, CATCC managed to bring us around for an uninterrupted approach, ending with an OK 3-wire.

After we finished our postflight, we debriefed CATCC on their poor performance. Apparently, the aircraft in front of us didn't turn when CATCC told him to. Adding to the confusion, the controllers failed to take any action and allowed both aircraft to continue, instead of removing one from the final bearing.

Clear weather, good visibility and an experienced crew prevented CATCC's vertigo-inducing vectors from affecting our approach and possibly putting our aircraft in the water.

Approach controllers are a crucial link in a Case III recovery. They paint the overall picture by connecting the participants' actions and intentions. This was one of the few times that I lost faith with the controllers and their situational awareness.

Ultimately, it's the aircraft commander's responsibility to keep the controller from putting him in an unrecoverable situation. If you can't follow CATCC's instructions or you must deviate, tell the controller. ➤

Lt. Mortimer flies with VAW-117.

Two T-2 Tales

by Peter Mersky

The training hop didn't promise anything out of the ordinary for this new SERGRAD instructor and his student. Granted, the IP had not been happy of late. He had told his friends that he was not pleased about his SERGRAD assignment, especially since another acquaintance, with lower flight grades, had received *his* choice of fleet seats. The previous day, he also got an on-base speeding ticket, which brought his total to 11. One more and he would lose his driving privileges on base.

The student pilot was ready to go, and after splitting the preflight responsibilities, the two Buckeye aviators strapped in and launched. They flew over to Randolph AFB, then flew as filed to NAS Chase, where they shot a practice GCA. At decision height, the instructor took control and landed with 1,500 pounds of fuel.

Taxiing up to a sister squadron's line and shutting down one engine, the instructor asked for gas. However, the line crew refused to refuel the visiting T-2. They said that the turning engine represented a FOD hazard. Annoyed, the instructor shut down the second engine.

Another problem developed when the line crew questioned whether the instructor had authorization to "buy" fuel without a proper credit card. The IP was beginning to lose his patience and threatened to take off without the gas. Ten minutes went by, and two contract-maintenance crewmen arrived with the authorization. Satisfied, the line crew asked the IP what he wanted.

"A couple hundred pounds," he replied.

"Do you want a light load?" one of the contract employees asked.

The instructor agreed to this form of refueling, which, according to Chase crews, referred to filling the tanks in the fuselage and wings, but not the two tip tanks. This procedure, which filled approximately 70 percent of the aircraft's fuel capacity, allowed a crew to land immediately without having to dump down to landing weight.

A lineman quickly hooked up the fuel hose, moving the tip-tank switch to "hold" to prevent fueling the tips. He didn't check the solenoid, however, and as the two pilots and the rest of the ground crew stood off to the left side, the student heard a loud click from the port tip tank. He wondered whether the tank was receiving fuel when it shouldn't.

After the fueling process was finished, the instructor, still annoyed at the lengthy authorization procedures, tried to hurry things along. The student checked the lower sight gauge on the port tip tank to reassure himself that the tank was empty, which it was. He then asked his instructor if he should do a complete preflight.

"Just check for any hydraulic leaks on the mainmounts," the IP replied.

The student dutifully checked the mainmounts, the T-2's underbelly and panels. He then looked at the starboard tip tank and saw the ball indicator. He did not pursue the investigation, however, and did not know whether it was the low or high ball. The IP probably could not have seen the lower sight gauge from his position during the preflight.

The IP watched his student do the abbreviated preflight, then told him to strap

in. Still impatient and angry over the reception he had received, the instructor went through a quick start and ran through his checks as he taxied for takeoff. The usual line checks were apparently dispensed with; later, the student couldn't recall putting his arms and hands outside the cockpit for the plane captain. Perhaps intimidated by the instructor, who had told his student that the SNA was just along for the ride back to Kingsville — a not-uncommon way instructors tell the student to just sit back and enjoy the flight — the student did not question the shortened preflight and pre-taxi sequence.

Ground cleared the T-2 for takeoff as the IP and student crossed the hold-short and told the crew to switch to Departure. The instructor did his run-up checks while still rolling toward the runway.

"We're on the roll," the IP called as he began accelerating down the runway.

The student saw 80 knots, followed by rotation at 100 knots. He started to call Departure to report airborne, noting the T-2 began rolling smoothly to the right, with 80 degrees AOB. The student later guessed that the starboard tip tank was only 10 feet from the ground. The nose began to rise and the bank decreased. The rudder pedal-shaker was vibrating, and the aircraft was buffeting, indicating an approaching stall.

As lift disappeared, the tip tank dug into the ground, and the RDO called for the two pilots to eject. Neither crewman was on hot mike, and as the student fumbled for the ICS switch on the throttle, the canopy blew off and the student was ejected. After a three-second ride in his chute, he hit the ground near the fireball. His chute started pulling him toward the fire, but he released his koch fittings and ran in the opposite direction.

The instructor had come down to the left of the crash site. He was badly hurt, but was breathing. His chute had only partially deployed. His helmet was some 60 feet away, although it was later determined that he had been wearing it when he hit the ground.

The aircraft had gone in on the right wing, quickly rolling itself into a ball and erupting in flames, fed by its fuel. An NAS crash crew quickly put out the flames, while ambulances brought the two crewmen to the hospital. The instructor died the next day.

Investigation showed that the starboard tip tank had been carrying fuel, but the port tip tank was empty.

...ambulances brought the two crewmen to the hospital. The instructor died the next day.

IP impatience also played a big part in another Buckeye mishap. Returning from Oceana to Meridian, the instructor and his student took a look at the weather; the forecast was not promising. With conditions deteriorating, the IP moved the brief ahead an hour-and-a-half. The IP had changed the destination and launch times three times the day before the flight. When the student arrived at base ops, he found that the IP had decided to wait for three hours because Oceana had fallen under a SIGMET, which prohibited CNATRA aircraft from launching. The instructor told his student that he now wanted to file for a field in Kentucky before heading home to Meridian.

The two aviators waited until a little after noon when the instructor decided to launch between two lines of thunderstorms. The crew ran through a shortened brief, suited up, and went out to preflight. The instructor told his student not to worry about the discrepancy log.

The student had barely started his walk-around when the instructor told him to get in. The hurried sequence intensified when the IP began starting the engines while his student was still strapping in.

With both engines on line, the student now knew that the ICS wasn't working properly. He hadn't heard his instructor, although the IP indicated with hand signals that he could hear the student behind him. The

troubleshooters who came out to check the problem had the IP shut down both engines, which only served to further annoy the instructor with a 30-minute delay.

With the ICS seemingly repaired, the IP restarted the engines — even as the troubleshooter hurriedly collected his tools off the wing — and began to taxi.

Now, the student became concerned that his wet compass and BDHI were not aligned. Since he was going under the bag for an instrument takeoff, his concern was justified, but the instructor said he would take care of things when they were positioned for takeoff. (The ADL had a gripe that the aft-cockpit's wet compass was useless, but the IP told his student to forget about the ADL and suit up.)

However, as the IP took the runway, and the student mentioned the alignment problem again, the IP's only reply was to impatiently ask his student, "Are you ready to go now?" The student said he was ready, and the IP ran both engines up to military, ran through a quick wipe out, and released the brakes. The ICS apparently failed again, leaving intercockpit communications one-sided at best.

At 80 knots, the student took control as briefed. He rotated the aircraft, retracting the gear as the T-2 took off. He then raised the flaps. Knowledgeable witnesses reported that the flaps came up too early. To prevent a stall, the instructor pushed the stick forward to drop the trainer's nose. However, without the required exchange of calls over the ICS, the student assumed that the IP had taken control of the aircraft. Investigators also speculated that the IP had actually been trying to clear his fogged windscreen — a common takeoff problem in the T-2 — and had focused his attention on turning the rheostat to apply more heat. Thus, when his forward vision cleared, and he saw the oncoming trees, he quickly tried to overcome the obstacle in his path.

The aircraft struck the ground, digging a 230-foot-long furrow between the dual runways. Becoming airborne again, the aircraft climbed to 100 feet, then entered a shallow left descent and hit the ground once more. The Buckeye bounded back into the air for a short distance before hitting a line of trees.

The IP had initiated command ejection before the final strike, and both aviators left the aircraft. The student suffered major injuries, and the IP later died.

There are several fatal similarities to these two mishaps involving training aircraft and crews. In both cases, if the individuals had been able to step back for a few moments from the self-induced pressure of making the launch, they might have given themselves a life-saving chance. There were several mechanical and psychological problems: faulty ICS, admin problems with refueling procedures, deteriorating weather, and personal problems. Nothing here should have killed two instructors, injured two students, and destroyed two aircraft.

Get-home-itis might have contributed to the overall setup. Students being intimidated by aggressive instructors might have also been a factor — after all, an O-2 undergraduate pilot can't be expected to question his lieutenant IP too strongly.

In both cases, if the individuals had been able to step back for a few moments from the self-induced pressure of making the launch, they might have given themselves a life-saving chance.

However, the overriding contributors to these Class A mishaps came from the instructors and how they conducted themselves on the ground before each final launch. In their rush, they removed the controls — preflight inspections, poststart checklists, and crew coordination — that might have kept them alive. ◄

Why Are Those People Pointing at Us?

by LCdr. C.W. Laingen

When I found out that my first squadron assignment as a station pilot meant flying the SH-3D Sea King, I realized I'd have to re-learn the gear-down item in the landing checklist. I had been flying an aircraft with skids in flight school.

The first six months in the squadron passed, and I became a HAC. The aircraft's landing gear was just one of the many items that became second nature during those six months. One sunny afternoon, my SAR crew and I discovered that nothing was second nature.

Our flight took us along the coast, VFR, on the Fourth of July weekend. We were an airborne-SAR asset for the many special events going on at the beaches, and we were primed for a rescue, especially since no one in the crew had ever made a real one.

As we watched the traffic along the two-lane beach highway from 500 feet, a light truck crossed the centerline and slammed head-on into an oncoming car, flipping the car and throwing it into the dunes. We watched the mishap in what seemed to be slow motion, then we reacted quickly.

The HAC, in the right seat, said, "I'm taking her down."

The statement made sense, and we prepared to land on the highway only seconds after the accident. As we were passing through 40 feet on the RADALT, the first crewman mentioned getting out to render assistance. I confirmed from the left seat that the cars were stopping in both directions to let us land — probably from fear of being sandblasted by the rotor wash. Everything seemed so natural, like the workings of a well-trained SAR crew that had flown together enough times to have no need to state the obvious.

However, as we passed 20 feet, my head came up out of the cockpit, and I suddenly had an uneasy feeling. I saw several people alongside the road pointing at the underside of the aircraft, but nothing clicked inside my head. I came back inside and quickly scanned the instrument panel. Something drew my gaze to the gear indicators, where I stared at two "UP" flags. I threw the gear handle down as I continued to stare at the indicators. Two barber poles indicating gear down bounced into the windows, and I simply said, "Gear down," to the HAC just as the aircraft touched the pavement.

Although it must have looked impressive — and planned — to the many beachgoers who witnessed our landing, our debrief was anything but impressive.

Not only was our potential rescue victim unhurt, our entire crew was embarrassed that we had not reacted properly. First, our preflight brief was clear that we would discuss any rescue before we tried it, no matter how short the discussion would be. Instead, we assumed that the situation could progress without words; our experience would back us up.

Second, I didn't listen to that inner voice that told me something was wrong 20 feet and seconds before landing. I should have stopped us at 20 feet to figure out what was bothering me. ◄

LCdr. Laingen was assigned to HC-16 at the time of this story. He now flies with HSL-48.

So, Let Me Get High Body Fat Is

(Chocolate sundaes all around – heavy

by Capt. Greg Pachman, USAF

Spring has finally arrived, and today is the first day that you are able to come to the squadron without your jacket. After briefing an overwater air-to-air hop, you head to the paraloft. The temperature is 72 F, the water temperature is 62 F, and a 10-knot wind is blowing from the west.

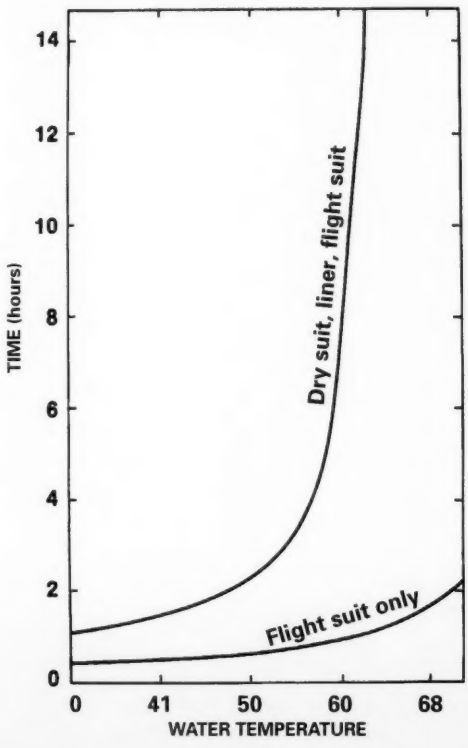
As you get to your peg, you come to the moment of truth. You are face-to-face with your exposure suit and liner. You glance at it; it stares back at you. You try to avert your eyes as you stuff your helmet into your bag, but its stare is unceasing. The regs say that you don't have to wear it, but you can hear them asking if you feel lucky. Well, do you?

If pilots have a love-hate relationship with any piece of flying equipment, the exposure suit would be the one. No equipment is hotter, more uncomfortable, more restrictive or more irritating to wear. Yet, there's no piece of equipment you appreciate more when you need it. This dichotomy makes it difficult to decide when you should wear the suit even if the regs do not require it. Unfortunately, there is no easy answer to that question. In fact, the answer lies more with your own body than with the advantages of the suit.

For those who were sleeping during the physiology portion of flight school academics, here is a quick review of hypothermia from *Aerospace Physiology/Human Factors*, an Air Force publication.

"When surrounding temperatures decrease, the first physiological action of the body is to decrease blood flow to the cold outer layers of tissue, thereby conserving critical body heat. This action also creates an insulating layer of skin and fat for the vital inner organs. Since the body can only produce a certain amount of heat, this restricted blood flow may help to prevent excessive heat loss and critical reduction of body temperature."

Thin guy time-to-live in different clothing and immersed.



This Straight– a Good Thing?

on the whipped cream and walnuts!)

Your body is hoarding heat for use in your torso to keep your core body temperature up. While lack of blood to the extremities will eventually destroy tissue, reduced core body temperature will lead to unconsciousness and death.

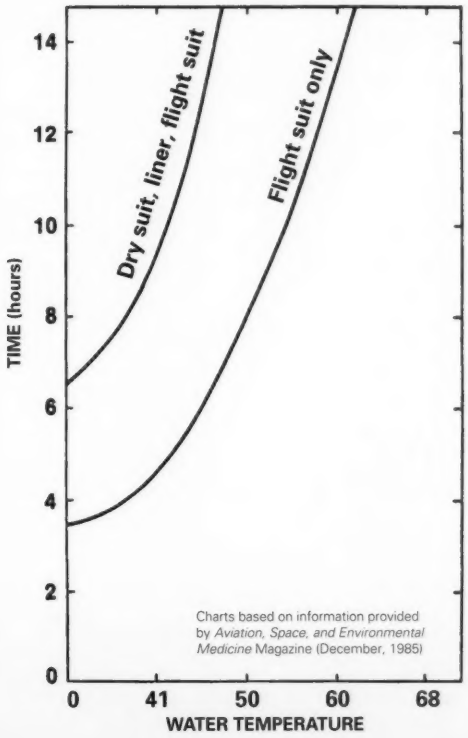
To understand just how rapidly this restriction in blood flow to the extremities occurs, and how quickly they become totally useless, try this nifty experiment. The next time you are at the club, stick your hand into a pitcher full of ice water for two minutes. Then try to undo a button on your shirt. Rest assured that you would not do much better trying to work a beacon or a pen-gun flare.

You ask, "Well, that's great, but my exposure suit is not designed to protect my hands, so what does this have to do with how an exposure suit works?" True, but now you understand what your body is willing to give up to sustain your core body temperature, so it is obvious that keeping your core body temperature up must be important. And this is where the exposure suit comes in. It is designed to slow the cooling of your core body temperature from 98.6 F (normal body temperature) to 93 F (where you become so incapacitated that you may not be able to keep yourself from drowning) to below 86 F, where you become part of the great oceanic "circle of life."

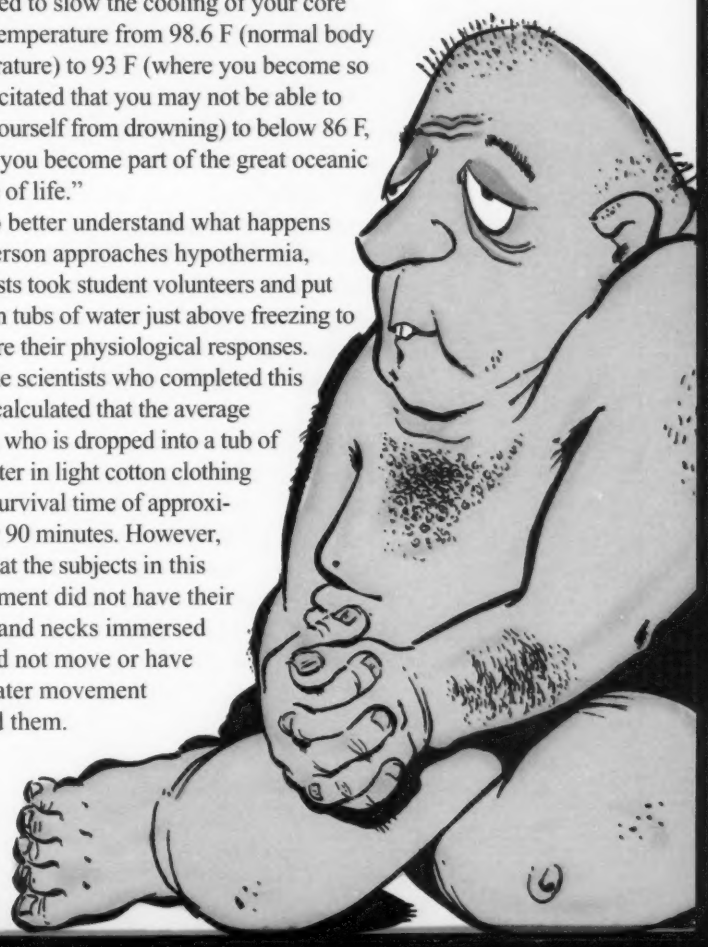
To better understand what happens as a person approaches hypothermia, scientists took student volunteers and put them in tubs of water just above freezing to measure their physiological responses.

The scientists who completed this study calculated that the average person who is dropped into a tub of ice-water in light cotton clothing has a survival time of approximately 90 minutes. However, note that the subjects in this experiment did not have their heads and necks immersed and did not move or have any water movement around them.

Fat guy time-to-live in different clothing and immersed.



Charts based on information provided by *Aviation, Space, and Environmental Medicine* Magazine (December, 1985)



Coast Guard studies have shown that swimming or water movement increases cooling rates by 35 percent; immersing the head increases cooling rates by up to 82 percent.

I call attention to the word "average" in the above paragraph because this study found a single important variable for determining how long a person will survive in ice-water: the difference in subcutaneous fat for each subject. Basically, the subjects who lugged around the most body fat had the longest survival times, just like whales and seals who spend a lot of time in ice-water. And the difference was huge. So big, in fact, that scientists at the USAF School of Aerospace Medicine at Brooks AFB decided to do their own study to explore this difference in greater detail.

The scientists at Brooks developed a computer model of the human body using the variables that determine human cooling rates. These factors include convective cooling, body dimensions, physiological factors, and clothing insulation. The scientists then used USAF aircrew anthropometric values as the basis for the physical characteristics of the aircrew they wished to study. They defined small, medium, and large aircrew as 10th, 50th, and 90th percentile, respectively. These percentiles equate to the following body-fat percentages: 5-8, 12-15, and 20, respectively. In more human terms, marathon runners fall into the 10th percentile, while people in the 50th percentile are never concerned about body-fat-measuring sessions. Those in the 90th percentile, however, are always wondering if they are within the standards for body fat.

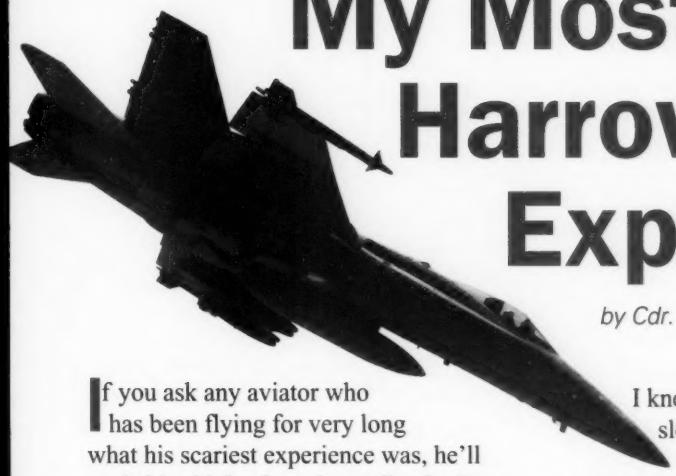
The dry suit expert at Warminster said, "You can tell the people who've been rescued from cold water–they don't mind wearing a dry suit."

The Brooks group used an arterial blood temperature of 93 F as their cutoff for survivable hypothermia. They confirmed that there was a large difference in survival times dependent on body fat. For example, a 10th-percentile man immersed in 50 F water with no protective clothing will reach the cutoff for survivable hypothermia in one hour while a 90th-percentile man will take eight hours to reach the same stage. A 90th-percentile aircrew wearing the same exposure suit that the pilots in my old Viper unit used to wear had approximately five times the survival time of a 10th-percentile aircrew in the same suit.

As a thin guy flying over the North Atlantic, I did two things. I wore the exposure suit every day, even if the regs did not require it, until the outside air temperature got high enough to make heat exhaustion a possibility (around 80 F for me, depending on the humidity). On very cold days, I wore as much insulation as I could under the suit, without making me so immobile that I could not do my job.

The Navy has exposure-suit experts on the payroll. For now they are located at Warminster, Pa. You can call them at DSN 441-3189 for the latest news on exposure suits and related information. They are constantly working on new exposure suit designs, as well as liners and gloves. They can tell you what you can wear to increase your survival time with the minimum impact on mission effectiveness. Another source is your local aeromedical safety officer or aviation survival training center. ◄

Capt. Pachman flew F-16s with the New Jersey Air National Guard. He is now an instructor flying AT-38s with the 88th TFS, Sheppard AFB.



My Most Harrowing Experience

by Cdr. G.R. White

If you ask any aviator who has been flying for very long what his scariest experience was, he'll probably think of one immediately. I guess I should consider myself fortunate that I don't have to weed through numerous incidents to find the one that I consider my closest brush with the Grim Reaper.

This particular flight was during my first fleet tour. I was a nugget who had just earned his section-lead qualification. The hop was going to be an opposed section low-level with an ingress to an unfamiliar target that was in considerably higher terrain then the surrounding area. Once in the target area, we would do a pop-up to deliver our ordnance. The brief was thorough, with particular emphasis on the climb to the target area, the slower-than-normal airspeed that could result from this climb, and finally the pop itself, with all the abort criteria.

The flight went smoothly as we flew in combat spread at low altitude. We had picked out each bogey before it became a threat and entered the unopposed ordnance-delivery portion of the flight.

I called, "Tac left," and started up the rising terrain to the target. Just to be on the safe side, I reminded us to closely monitor our airspeed. As I approached the target area, I pulled up into the vertical, rolled inverted and looked to acquire the target. Where was it? Finally, I spotted it at 12 o'clock high (from my inverted position). I pulled hard to get my nose down to the target and rolled upright. Immediately, I knew I was in trouble. I was low, slow and in a 30-degree dive.

I started a max-G pullout while mashing the pickle switch. My inert bombs came off (the least of my worries at this point) as I felt the aircraft squat, maneuvering at the edge of the envelope. I felt ground rush as the trees came up at me. The next second took an eternity to pass, and I wondered if I was going to make it.

I had specifically briefed this situation because I had known two pilots who were killed doing pop-up roll-ahead maneuvers. The second one crashed in the same spot where I was right now, under the same circumstances. Did the fact that I had covered it extensively in the brief make a difference? Maybe. At least I had a plan now that I recognized my predicament.

I had concentrated too hard on acquiring the target and putting my bombs on it, and I had lost the big picture. Overcompartmentalization? I'd say so. How many times have you breezed through "loss of situational awareness" during a brief?

I saw my nose break the horizon, and the trees started to get smaller. I had butterflies in my stomach from the adrenalin rush and the time compression. I knew that was the closest I had ever come to dying.

I judiciously flew the rest of the hop without further incident and landed at our home base. In the debrief, my more senior wingman simply stated, "Good hop. Your bombs were right on target."

So was the lesson I'd learned. ➤

Cdr. White was the CO of VFA-113. He is now assigned to OPNAV 03.

Snow in the Red Sea?

by Lt. Gregory Schwaiger

The folder slid out and hit the deck, starting an explosion of 4 inches of paper...

My first long cruise — I was finally under way, accumulating "salt." After crossing the Atlantic and the Med, we were on station in the northern Red Sea, completing our turnover with the ship we were relieving. We were scheduled to pick up the staff on board the other ship and transfer them to our deck. After briefing the flight, we launched.

Our first transfer went fine, and we were soon back on their deck to pick up the commodore and the last of the staff equipment, publications and paperwork. All of their gear seemed to be secured and locked in cruise boxes.

On deck back at mother, after the passengers had left, we began unloading the cruise boxes with the help of the flight-deck crew. We removed all the large boxes, and there were only a few small boxes left. The HAC and I watched. Suddenly, we heard a slight buzzing, and as I looked up, I thought it was snowing — in the Red Sea. One of the flight-deck crewmen had picked up what he thought was a box, but which was actually a heavy cardboard file holder stuffed into an open-ended box. He picked up the box, the folder slid out and hit the deck, starting an explosion of 4 inches of paper, which was sucked into the rotors, chewed up and spit back out!

The HAC and I saw that panic was developing and, to prevent damage to the engines, decided to shut down. After some waving and pointing, we were finally able to talk to our aircrewman, who cleared all the flight-deck crew from the rotor arc before we secured the engines.

Afterward, we made a FOD inspection. Except for a few pieces of paper lodged in some crevices in the main-rotor system and the transmission deck, there was no damage. Of course, the commodore and his staff weren't happy with the results of our giant paper shredder.

After debriefing, a few things were clear. The aircrewman should remain on ICS when unloading the aircraft. All hands need to know what is going into the aircraft and make sure it is properly packaged and handled.◄

Lt. Schwaiger flies with HSL-42's Det 3, on board USS *Leyte Gulf*.

Where Does a 500-Pound Buzzard Fly?

(*Anywhere he wants to*)

by Joe Casto

Keeping an aircraft carrier on station in the Persian Gulf gives us a problem we don't usually have to plan around at sea — birdstrikes. Have you seen the National Geographic film that shows flocks of flamingos as large as clouds taking to the air when disturbed? You're liable to see them up close and personal if you stray into their feeding areas. Use the migration map on the back of this page to assist you in avoiding them.

A two-pound sea gull struck by an aircraft at 180 knots has an impact force of 8,000 pounds. If that aircraft is doing 535 knots, the impact force will be 72,000 pounds. The comparable values for a four-pound duck are 12,800 pounds and 115,200 pounds, respectively. The examples tell us that doubling the size of the bird doesn't quite double the force of impact; but as speed doubles, the kinetic energy increases by a factor of four. If the angle of impact is right, that 57.5-ton bird will penetrate whatever it hits. Your last line of defense against birdstrike debris in the cockpit is your visor; keep it down.

Three billion birds cross and circumnavigate the Persian Gulf and migrate through Saudi Arabia in September and October to winter in eastern and southern Africa. They return to Europe, Asia and India in March and April. The birds pass through on a broad-front movement, except for larger raptors, storks and pelicans that follow mountain ranges and coastlines looking for short sea crossings. They soar on thermals, sometimes in flocks of hundreds, and average 3,000 feet AGL; they fly lower along mountainous terrain. **Tips:** Don't fly over black kite, steppe eagle or stork areas. These birds soar at 3,000 feet and higher. Avoid bird-concentration areas along the coast and uninhabited islands in the Arabian Gulf. There you will find dense concentrations of breeding waterbirds that generally fly below 500 feet.

Kuwait, Saudi Arabia, and Bahrain Large numbers of steppe eagles and buzzards round the north end of the Persian Gulf and pass over Kuwait before dispersing into Saudi Arabia. Black kites and steppe eagles migrate through western Arabia to Africa. Raptor routes cross the center of Saudi Arabia and extend from southern Iran across the Straits of Hormuz to the Musadam Peninsula (Oman).

Kuwait hosts large numbers of wintering birds. Offshore islands, such as Kubr and Bubiyan, are frequented by breeding seabirds. Kuwait Bay supports flamingo, heron and egret flocks that stop to feed during migration. Migrants overfly Kuwait at high attitude, but wintering and stopover birds fly below 500 feet.

Shore birds, gulls and wading birds cross Saudi Arabia at high altitude to winter in the Indian Ocean region. Many soaring birds, such as gulls and vultures, concentrate over garbage dumps and soar above 2,000 feet AGL.

Jahrah, 25 kilometers west of Kuwait City, has a canal that attracts birds.

Qatar: Sewage lagoons 9 kilometers south of Doha City and a larger lagoon 16 kilometers to the southwest attract marsh harriers, wintering ducks and waders.

The United Arab Emirates supports eagles, flamingos and wintering birds.

Abu Dhabi City's coastal creek and the coasts of Sharjah attract waders and osprey. A shallow lagoon 0.5 kilometers inland from Dubai is a feeding ground to ducks and flamingos.

Two kilometers from *Khor Dubai*, the Zabeel water-treatment plant attracts waders, waterfowl and raptors. Gulls roost and bathe there from November to March.

Al Beidah: A vast complex of lagoons and islands northeast of Umm al Ouwaim attracts waders and shorebirds from August to April. A large colony of breeding Socotra cormorants flies along the coast in massive feeding sorties. Gulls roost on the mudflats.

Printed as a supplement to *Approach Mech* by
Commander, Naval Safety Center
Data: Dr. Michael S. Borowsky
Design and layout: Laurinda Minke
For questions or comments, call Joe Casto at
(804) 444-3520 ext. 7247 (DSN 564)

Sharjah's Ramtha waste-disposal site, 0.5 kilometers inland, near the Ajman border, attracts large numbers of gulls, waders, and waterfowl.

The old sewage works near the southeast bank of *Dubai Creek* just upstream from the Garhoud road bridge, attracts waders, gulls and raptors. Gulls and waders fly between mudflats and sewage ponds throughout the day.

Al Jazeerah Khor (Khor Qurm), just south of Ras al Klaimah and adjacent to the old abandoned village of Jazeerah al Hamra, attracts flamingos, massive feeding parties of Socotra cormorants just offshore, marsh harriers and osprey. Spotted and steppe eagles migrate through, soaring high over the dunes.

Socotra cormorants stay year-round in the southern Gulf. Dense colonies breed on uninhabited Gulf islands October through April. Griffin vultures breed near Riyadh. They roost in loose colonies on high cliffs January through May and soar on thermals all day.

Oman: Large flocks of white storks migrate high over the Ja'alan district and Dhofar in autumn. Spring return passage is through Western Arabia. Some winter in the Ja'alan district.

Egyptian vultures descend on the Bahtinah in autumn. Many winter over at Salalah.

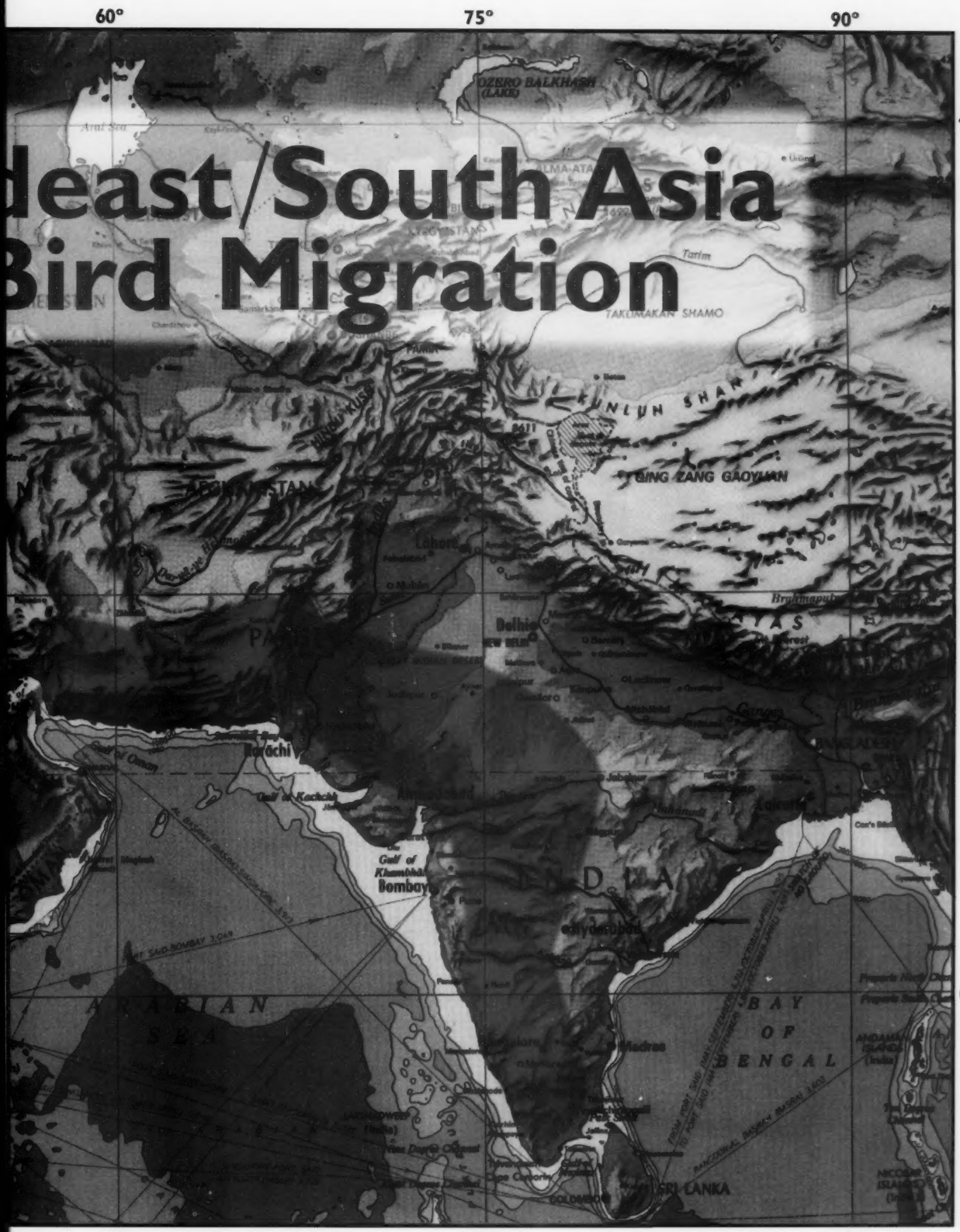
Musandam: The Socotra cormorant breeds in spring and summer near Dhobar.

Dhofar: Dabbling ducks are winter visitors. You'll see more of them in the spring than autumn. Raptors, ducks, waders and others turn southward over and through the natural passes in Jabal Akbdar in autumn. Little grebes, little bitterns, great cormorants, dabbling ducks, nightjars, rollers and small passerines cross the desert in spring and autumn.

BASH Point of Contact:

Maj. Dave Arrington DSN 246-0698
HQ Air Force Safety Center, SEFW
9700 Ave. G S.E. Bldg 24499
Kirtland Air Force Base 87117-5671.

30°E
45°
45°
30°
0°
30°E
45°
Sea of Azov
BLACK SEA
CASPIAN SEA
BAKU
TURKEY
SYRIA
CYPRUS
ISRAEL
JORDAN
AN NAFŪD
IRAQ
KUWAIT
BAHRAIN
QATAR
IBYA
EGYPT
RABIAN DESERT
RED SEA
CHAD
SUDAN
CENTRAL AFRICAN REPUBLIC
HUNGARY
ROMANIA
BULGARIA
GREECE
ALBANIA
Mi



dleast/South Asia Bird Migration

Class A Mishaps

The following Class A Flight Mishaps occurred between 16 Nov-22 Feb '96

Aircraft	Date	Command	Fatalities
FA-18	01/15/96	VFA-203	0
Aircraft crashed on landing following excessive yaw.			
FA-18 (2)	01/17/96	VFA-22	1
Midair collision during routine night mission.			
F-14A	01/29/96	VF-213	2
Aircraft on routine training crashed shortly after takeoff.			
F-5E	02/08/96	VFA-127	1
Aircraft departed controlled flight and crashed into ground.			
AV-8B	02/16/96	VMA-231	1
Harrier crashed into ground on departure.			
F-14D	02/18/96	VF-11	2
Tomcat crashed into water during air-target-tracking exercise.			
F-14A	02/22/96	VF-24	0
Tomcat lost at sea during FCF.			
HH-1N	02/22/96	NAS Fallon	0
Helo crashed on SAR mission into mountainous terrain.			

Milestones

Command	Date	Hours	Years
VFA-146	11/27/95	40,000	10
VFA-131	12/09/95	31,000	8
HS-15	12/12/95	35,000	11
VAW-121	12/15/95	56,000	29
VAQ-134	12/16/95	34,500	25
VF-201	12/23/95	7,800	3
CV 65	01/12/96	60,000	16
VQ-4	01/15/96	253,000	24

Tear out this insert! Post this newsletter until it's old news, then flip it over as a poster.

Class A Mishaps/Rate

	FY96 to Date		FY95 to Date	
	No.	Rate	No.	Rate
Navy/Marine	12	1.91	16	2.80
All Navy	8	1.65	10	2.38
All Marine	4	2.78	6	3.97
NAVAIRLANT	1	0.77	1	0.88
NAVAIRPAC	6	4.40	6	4.57
MARFORLANT	2	4.26	2	3.87
MARFORPAC	1	1.41	4	5.39
NATRACOM	0	0.00	2	1.77
NAVAIRRES	1	1.44	1	2.14
4th MAW	1	6.70	0	0.00
NAVAIRSYSCOM	0	0.00	0	0.00
Non-MARFOR	0	0.00	0	0.00
OPNAV	0	0.00	0	0.00

Safety Survey Focus Team

We recently had one of our best quarters ever. About the time we started patting ourselves on the back, the bottom dropped out; we had 10 mishaps in 39 days. Was this a statistical anomaly or a forewarning of a new, bad trend? I hope it is the former, but in case it wasn't, we immediately took drastic measures to find and correct problems.

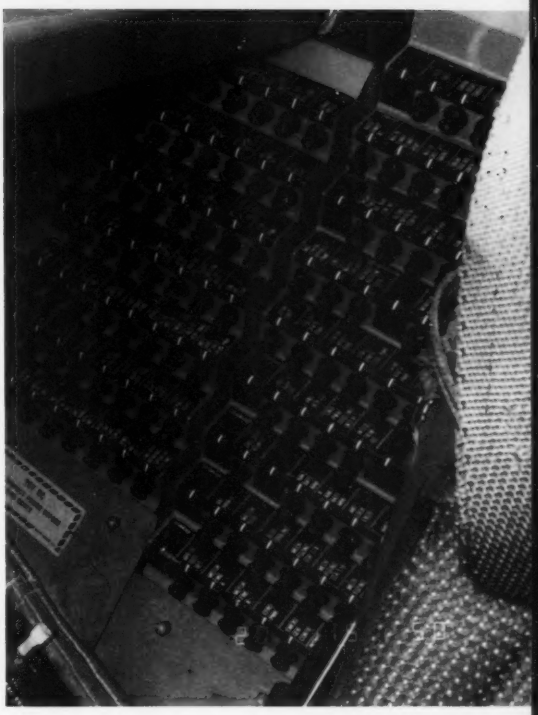
The Naval Safety Center sent three special safety-survey teams to the West Coast in late February. In addition to surveying squadrons, the Center gave presentations on risk management, maintenance malpractice and human factors; we also gave training on ground-crew coordination, fatigue and stress management. These teams have looked at a lot of squadrons, helping them compare their programs with the rest of the fleet.

Why did the string of mishaps bother us so much? Because those 10 Class A flight mishaps killed 12 people. Up to that point, between October 11, 1995, and January 14, 1996, no Class A flight mishaps occurred–a record 96 mishap-free days. The Marine Corps was mishap-free between October 5, 1995, and February 16, 1996–a record 129 days. Even with the recent rash of crashes, the mishap rate at the end of February was about 2.00 per 100,000 flight hours, better than the same period a year ago when the rate was about 2.75. So, we're still doing very well, but we have to make sure we continue on that path.

While we've tried to help with the big picture, I want you to look at the way you're doing business, and ask yourself, "Am I part of the problem or part of the solution?"

Was That the Right CB?

by Lt. Mark Black



We were two-thirds through Topgun's power-projection course. The pace of the missions and our instructors' expectations were increasing. Our exercise was to operate in R2510, the Echo Range. We were to make a fighter sweep through an area heavily defended by SAMs.

We arrived at our holding point and waited to enter the area. Once we got clearance and made an administrative run, we were ready to start. But, wait! We had a master-caution light. A quick check revealed an OXYLOW warning light, too. The gauge read eight liters. I figured it must be a faulty sensor.

My pilot and I punched the master-caution lights-out button. New problem: the master-caution light kept coming on. I knew how to fix it. I could pull the OXY/BINGO circuit breaker (7F6), which would disable the sensor for the OXYLOW warning light and also put out the master-caution light. This action would also disable the BINGO and LOW FUEL light sensors, but that was fine because we were only going to make one run. With 12,000 pounds, we were fat on gas.

We got down below SAM coverage. Too late, they had spotted us. We had to start evasive action. All our RHAW gear just went blank. What did *that* mean? Check six! That's what — bandits, closing. Great! They started breaking off, which could only mean one thing. The RHAW gear was going berserk.

Back to dodging simulated missiles. We finished with no more RHAW indications. What was our fuel state? We had only 1.7 left!

Fortunately, up to this point, all the threats were simulated. This new one was *real*. We had a minor aircraft problem before we started the exercise, but now we had a real dilemma. Our wingman only had 2.0 as well. Fortunately, NAS China Lake was only 15-20 miles away, and we made a safe recovery.

There are two points to make. We have to know our aircraft cold. Our decision to pull the OXY/BINGO circuit breaker came back to bite us. A better way to defuse the light problem would have been to pull the OXY QNTY IND circuit breaker (3F3), which disables the signal from the oxygen gauge to the sensor for the OXYGEN LOW warning light without hindering the BINGO or LOW FUEL lights.

The second point concerns our lookout doctrine. Although we always concentrate on this important area, we must also remember vital aircraft parameters in our scan, such as airspeed, altitude, AOA, and fuel. For the most part, we keep track of these items, but when a situation starts to overwhelm us, we sometimes drop things from our scan. Don't solve one of the enemy's problems for him by putting yourself in this predicament.◀

All our RHAW gear just went blank. What did *that* mean?

Lt. Black is a RIO. He flew with VF-51, and is now an instructor with VF-101.

New Format for

On June 1, 1996, the Navy Meteorological and Oceanographic Command's aviation-support activities will stop using the Synoptic Observation and Terminal Forecast (TAF) format. When the conversion is complete, aviators will be able to understand meteorological information produced by any country using one set of common codes and formats. Weather observations and TAFs will be more detailed and more useful.

The replacement format will be METAR (Meteorological Reports-Aviation Routine) and IAF (International Aerodrome Forecast). The "new" format has been the common weather "language" spoken by foreign meteorological agencies for decades.

The code change allows meteorologists to transmit much more information, which means that aviators will have more data to decode. Military weather forecasters are the resident experts in METAR and TAF codes, and they can help you translate the information into something you can understand. Another source for training is an educational videotape produced by

KEY to NEW INTERNATIONAL AERODROME FORECAST (TAF) and NEW AVIATION ROUTINE WEATHER REPORT (METAR)

TAF
KPIT 091720Z 1818 22020KT 3SM -SHRA BKN020 FM20 30015G25KT 3SM SHRA OVC015 PROB40 2022 1/2SM TSRA OVC008CB FM23 27008KT 5SM -SHRA BKN020 OVC040 TEMPO 0407 00000KT 1SM -RA FG FM10 22010KT 5SM -SHRA OVC020 BECMG 1315 20010KT P6SM NSW SKC

METAR
KPIT 1955Z 22015G25KT 3/4SM R22L/2700FT TSRA OVC010CB 18/16 A2992

Forecast	Explanation	Report
TAF	Message type: TAF-routine and TAF AMD-amended forecast, METAR-hourly and SPECI-special report	METAR
KPIT	ICAO location indicator	KPIT
091720Z	Issuance time: ALL times in UTC "Z", 2-digit date and 4-digit time for TAF, 4-digit time for METAR	1955Z
1818	Valid period: first 2 digits begins and last 2 ends forecast	
22020KT	Wind: first 3 digits mean true-north direction, nearest 10 degrees, (or VaRiaBle;) next 2 digits mean speed and unit, KT, (KMH or MPS); as needed, Gust and 2-digit maximum speed; 00000KT for calm; (for reports only, if direction varies 60 degrees or more, Variability appended, e.g., 180V260)	22015G25KT
3SM	Prevailing visibility: in U.S., Statute Miles & fractions; above 6 miles in TAF Plus6SM. (Or, 4-digit minimum visibility in meters and as required, lowest value with direction)	3/4SM
	Runway Visual Range: R; 2-digit runway designator Left, Center, or Right as needed; "/"; Minus or Plus in U.S., 4-digit value, FeeT in U.S., (usually meters elsewhere); Variability (and tendency Down, Up or No change)	R22L/2700FT
-SHRA	Significant present, forecast and recent weather: see table	TSRA
BKN020	Cloud amount, height and type: SKy Clear, SCaTtered, BroKeN, OVerCast; 3-digit height in hundreds of feet; and either Towering CUmulus or CumulonimBus. Or Vertical Visibility for obscured sky and height "VV004", or unknown height "VV///". More than one layer may be forecast or reported. CLeaR for "clear below 12 thousand feet" at automated observation sites.	OVC010CB
	Temperature: in degress Celsius; first 2 digits, temperature "/" last 2 digits, dew-point temperature; below zero reported with Minus, e.g., M06	18/16
	Altimeter setting: indicator and 4 digits; in U.S., A-inches and hundredths; (Q-hectoPascals, e.g., Q1013)	A2992

Weather Reports

by AG1 John V. Klimas

KEY to NEW INTERNATIONAL AERODROME FORECAST (TAF) and NEW AVIATION ROUTINE WEATHER REPORT (METAR)

	Supplementary information for report: (Wind Shear in lower layers, LanDinG or TaKeOFf, RunWaY, 2-digit designator; REcent weather of operational significance.) ReMarK: Automated Observation or AOAugmented; wind shear; recent weather and time; and TORNADO, FUNNEL CLOUD, WATERSPOUT.
FM20	FroM and 2-digit hour: indicates significant change
PROB40 2022	PROBability and 2-digit percent: probable condition during 2-digit beginning and 2-digit ending time period
TEMPO 0407	TEMPOrary: changes expected for less than 1 hour and in total, less than half of 2-digit beginning and 2-digit ending time period
BECMG 1315	BECoMinG: change expected during 2-digit beginning and 2-digit ending time period

Table of Significant Present, Forecast and Recent Weather - Grouped in categories and used in the order listed below; or as needed in TAF, No Significant Weather.

QUALIFIER

Intensity or Proximity

- Light "no sign" Moderate + Heavy

VC Vicinity: but not at aerodrome; in U.S., 5-10SM from center of runway complex (elsewhere within 8000m)

Descriptor

MI Shallow	BC Patches	DR Drifting	TS Thunderstorm
BL Blowing	SH Showers	FZ Supercooled/freezing	

WEATHER PHENOMENA

Precipitation

DZ Drizzle	RA Rain	SN Snow	SG Snow grains
IC Diamond dust	PE Ice pellets	GR Hail	GS Small hail/snow pellets

UP Unknown precipitation in automated observations

Obscuration

BR Mist	FG Fog	FU Smoke	VA Volcanic ash
SA Sand	HZ Haze	PY Spray	DU Widespread dust

Other

SQ Squall	SS Sandstorm	DS Duststorm	PO Well developed dust/sand whirls
FC Funnel cloud/tornado/waterspout			

Explanations in parentheses "( )" indicate different worldwide practices. Ceiling defined as the lowest broken or overcast layer, or the vertical visibility. Automated Observations may be Augmented manually for certain weather phenomena. TAFs exclude temperature, turbulence and icing forecasts and METARs exclude trend forecasts. Although not used in U.S., Ceiling And Visibility OK replaces visibility, weather and clouds if: visibility is 10 kilometers or more; no cloud below 1500 meters (5000 feet) or below the highest minimum sector altitude, whichever is greater and no cumulonimbus; and no precipitation, thunderstorm, duststorm, sandstorm, shallow fog, or low drifting dust, sand or snow.

March 1993 — UNITED STATES DEPARTMENT OF COMMERCE
NOAA/PA 93054 — National Oceanic and Atmospheric Administration—National Weather Service

the FAA and the AOPA Air Safety Foundation titled, "Introduction to METAR/TAF." You can get a copy by calling the ASF at 800/872-2672. The price is $10 per copy, plus $3.25 for shipping and handling.

The TAF format resembles the current Terminal Forecast, which makes learning the new system relatively easy. The layout of the forecast has changed, and new elements have been added. Hourly reports (synoptic observations), when converted to METAR, will also be easy to decode. The elements are reported in a different order from what you are used to, and visibility may be reported in statute miles or meters. A method of identifying automatic reporting stations and language defining windshear should be added to the final set of METAR and TAF codes.

The conversion effort is immense; publications and texts are being altered, new key cards are being developed and printed, and 17 different communication systems are being reconfigured. If you get confused, the *Aeronautical Information Manual* (AIM) also has a detailed ◄ section devoted to the new system.

AG1 Klimas is assigned to Naval Atlantic Meteorological Oceanographic Center, Norfolk.

An ORM Primer

by Cdr. Kathy Ozimek

Mishap reports are full of stories about good people getting into situations they shouldn't have.

Several years ago, an FA-18 pilot launched a Harpoon missile at a merchant ship, causing $200,000 damage to the ship and killing an officer. As with many mishaps, there was a long list of causal factors. Supervisory errors of every participating agency from the fleet commander all the way down to airborne E-2 and P-3 crews contributed to the ineffective command-and-control system. The final link in the long chain was the Hornet pilot, who didn't identify the target and clear the range before pulling the trigger.

Less than a year later, another FA-18 pilot dropped a live Mk-82 on a U.S. cruiser, punching a million-dollar hole in the bow and injuring five people. Once again, "failure to identify the target before releasing ordnance" was a causal factor. The lead and wingman had not discussed methods of deconflicting targets, were not familiar with the pre-exercise message, and didn't identify ships in the vicinity. After being told to bring the ordnance back to the ship (because the supply of para-flares had run out), and after his lead told him that another bombing run was not a good idea, he nevertheless went in for one more try on what he thought was a para-flare in the water. It was the cruiser.

A few years ago, a CH-46 crew conducted a range-sweep mission, then continued the flight with an unbriefed, unscheduled "photo op." After dropping off the photographer, the HAC made his approach to a mainmount landing on the side of an abandoned, tipped-over bus! Things were just fine until, unbeknownst to the HAC, the left main landing gear became entangled in the exposed framework of a bus window. When the HAC added power, he partially lifted the bus off the ground, and the aircraft rolled over.

By now, you're probably shaking your head and wondering how such incredible things can happen. Looking back, it's easy for us to see the problems in these scenarios. Certainly, *we* wouldn't make mistakes like that! But, before you get too comfortable, take a look at what the AMBs and COs said about the folks involved in these mishaps.

One MIR said the pilot was handpicked because of his track record of meticulous planning, preparation and execution. He was fully NATOPS-qualified, well-rested and nourished.

Another pilot was thought to be one of the better junior aviators in the squadron.

A third pilot didn't show any tendencies that would have alerted anyone that he might intentionally violate SOP.

These pilots were not "dirt bags." They were top-notch aviators. Mishap reports are full of stories about good people getting into situations they shouldn't, where they box themselves in and can't get out.

What the above mishaps have in common is that an unlikely event developed that the crew members did not anticipate, but *could* have. I can't help but think that if the FA-18 pilots had considered the possibility that they were aiming for a ship instead of a target, they wouldn't have been so quick with the release.

Would the young bus-landing star have tried this feat if he had thought the landing gear might get caught in the windows? What's missing in all of these scenarios is the anticipation of, and preparation for, the unexpected, which is where Operational Risk Management (ORM) can help.

I'm convinced that ORM can help because of what I have seen in wardrooms throughout the fleet. As part of my ORM-training sessions, I conduct a class-participation exercise. During the exercise, I hand out a scenario, which describes the actual preflight situation before a mishap (although I don't tell the audience that it was a mishap).

I give the audience the same information that was available to the aircrew or command personnel involved in the mishap. Next, I ask the group to use the five-step Operational Risk Management process to determine what they would do in that scenario.

Amazingly, even though most of my attendees are not familiar with the mishap, the audience always comes up with controls that would have prevented the mishap, and they do it in 10 or 15 minutes! I have done this exercise more than 20 times with various audiences and scenarios, with the same result. Are these audiences any smarter than the folks who were involved in the mishap? I don't think so. What did they have that the mishap crews didn't have? A tool that encouraged them to thoroughly consider the possible outcomes and expect the unexpected — Operational Risk Management.◀

Cdr. Ozimek is an aircraft analyst with the Naval Safety Center.

The Operational Risk Management Process

1. **Identify hazards**
   - **a.** List the major steps of the operation
   - **b.** For each step above, list all of the potential losses and the contributing hazards and causes you can think of(even the unlikely ones)
2. **Assess hazards**
   - **a.** Determine the level of risk associated with the hazards, based on severity and probability of the potential loss
3. **Make risk decisions**
   - **a.** Consider risk-control options
   - **b.** Determine if risk outweighs benefit
   - **c.** Communicate with higher authority, if required
4. **Implement controls**
5. **Supervise**

Suggestion: Post the five-step process in your ready room to remind crews to use ORM during flight planning.

For more information on the ORM process, see OPNAVINST/MCO 3500.40, or call Cdr. Ozimek at DSN 564-3520, ext. 7277.

Making Money

by LCdr. Tom Ganse

One-and-a-half *billion* dollars — nearly four 12-plane squadrons, or an entire squadron's worth of pilots! My, how that amount of money would help ease our manpower, fiscal and supply shortages. The fact is, FA-18 mishap files show that proper aircrew coordination could have prevented most of the mishaps that list aircrew causal factors (more than half of all Hornet mishaps). Even though this article uses the FA-18, the subject also applies to AV-8Bs, F-5s, and other single-seat tactical jets.

Our community may have inherited its resistance to aircrew coordination training from previous aircraft NATOPS manuals whose Section IX Flight Crew Coordination was a big page with two small words — "not applicable" — or perhaps from 50 years of training to defeat an ECM threat. Maybe the resistance comes from many generations of simple, single-mission aircraft.

Regardless, it's 1996, and you can't sneak up on someone when CNN starts setting up cameras 12 hours before a strike. The days of one plane, one pilot, one bomb, one mission contrast starkly with a laser FLIR-equipped FA-18 operating on NVGs and hauling SLAM, Harpoon, LGBs, or AMRAAM. Today's section or division of fighters must coordinate and integrate with GCI, E-2s and other controlling agencies, even under the best circumstances.

The Naval Safety Center recently distributed a paper, "An Aircrew Coordination Primer for the Single-Seater," to all Hornet commands. This brief discussion includes seven astonishing examples of recent Hornet mishaps attributable to aircrew-coordination shortfalls. It relates them to the seven critical skills required for effective aircrew coordination: leadership, coordination, assertiveness, decision making, mission analysis and briefing, adaptability and flexibility, and situational awareness. What follows is adapted from that paper.

You can cause a mishap if you can't be flexible and adapt, but also if you are too flexible or adaptable, that is, a "hacker." This is how.

Cosmo 27 was a four-plane night flight whose mission was a night-attack advanced-readiness sortie. The mission would exploit the full night-attack capabilities of the FA-18. The brief was scheduled for 1900.

As the day began, all aircrew involved were aware of the schedule and adjusted their day's events accordingly. By 1300, one of the pilots removed himself from the schedule, but OPS found a replacement shortly thereafter. Next, the flight leader/mission commander

agreed to swap flights with another qualified pilot, who was scheduled for the same mission with an 1830 brief. That pilot's afternoon FCF slid, making it impossible to complete the checkflight and still make his original brief. Now only two of the original four pilots were still on the scheduled event.

Because the checkflight would affect preparations for a 1900 brief, the new flight leader decided to let one of the other flight members lead the flight. He felt that pilot would have more time to prepare for the brief and that the new positions would provide more valuable training for the more junior members. This third flight leader learned of his new role at 1600. Shortly after that, the flight was reduced to three planes, leaving the new leader as the only remaining member of the original flight.

The flight leader prepared a thorough brief, which covered all reasonable contingencies. He delayed the brief 15 minutes to allow all aircrew to assemble and prepare for it. After the brief, they learned that the planned target was unworkable because of weather, but that an alternate target was available at a later time. The flight rebriefed for the alternate, using the same geometry and parameters planned for the initial target complex.

Meanwhile, the airfield entered Thunderstorm Condition I, which delayed aircraft fueling and loading. As walk-time approached, the mission commander directed everyone to proceed as if they were going on the mission, because they could cancel later. The aircrew manned up, but delayed engine start because of the "Thunder I."

When they were finally authorized to start, the flight received a PIREP reporting the target area workable. They also learned of an aircraft overhead with mechanical problems. Realizing the delays might force them past their scheduled range time, the flight leader modified the brief on tactical frequency. The new plan involved omitting the tactical ingress route and proceeding directly to the initial point. They would make only one attack run to release all ordnance.

Cosmo flight finally launched 30 minutes after the scheduled takeoff time and five minutes before their range time expired. Dash 1 joined loosely on his lead's wing and turned toward the initial point. Dash 3, the mission commander, was never able to catch the flight as they headed for the IP at 450 to 480 knots. He remained in a 3- to 4-mile trail. Meanwhile, Dash 1 did the radio drill through the controlling agencies, requesting an extended target time for the single-pass attack.

After only 11 minutes, the flight arrived at the IP. They turned toward the target, climbing 2,000 feet above the briefed release altitude. Dash 3 remained in trail. Dash 2 and Dash 3 couldn't see the target using their night vision goggles, but Dash 3 obtained a good FLIR picture and continued.

Approaching the roll-in point, lead called in hot, still 3,000 feet below the briefed roll-in altitude. Dash 2 realized that he was low, but only climbed an additional 1,000 feet before rolling in. As he leveled his wings in the dive, he saw a bright flash and aborted his run, noting a radar-altimeter warning as he bottomed out. The bright flash was Dash 1 hitting the ground.

...ACT *is* applicable to our single-seat community.

When does adaptability and flexibility become a liability? Clearly, long before the point of impact. Although several skills in aircrew coordination were missing from this mishap, the overriding mismanagement of adaptability and flexibility cost this highly respected aviator his life.

"An Aircrew Coordination Primer for the Single-Seater" contains six other examples like this, examples that vividly demonstrate why ACT *is* applicable to our single-seat community. Make no mistake– this is where we will make money (and save lives). Take this newly found perspective with you next time you are scheduled for the CNET course. ◄

LCdr. Ganse is an FA-18 analyst at the Naval Safety Center.

BRAVO ZULU

Lt. Glenn, Ltjg. Movizzo, Lt. Hines, Ltjg. Garcia, and LCdr. Brewer

VAW-124

Lt. Walt Glenn
Ltjg. Paul Movizzo
Lt. Karl Hines
Ltjg. Rob Garcia
LCdr. Rob Brewer

While taxiing from the aft "Hummer Hole" of USS *Theodore Roosevelt,* Lt. Glenn (CAPC) saw the yellowshirt director signal him to stop. At the same moment, the ship heeled heavily to port, making the E-2 slide toward an S-3 on cat 4.

Lt. Glenn realized that his brakes wouldn't work, because it was late in the deployment and the flight deck was slippery. He and Ltjg. Movizzo (copilot) applied full reverse thrust, stopped the slide, and managed to hold the aircraft in place while the deck crew chocked and chained it.

This emergency is not specifically covered in NATOPS. The consequences of a collision on the flight deck, especially involving a propeller-driven Hawkeye, could have been staggering.

VT-7

1stLt. James Wellons, USMC

Along with his lead, 1stLt. Wellons launched on his first ACM solo. The flight went as briefed, except for a flickering fuel-boost light when 1stLt. Wellons unloaded to regain airspeed after an engagement. He quickly reduced the AOA. NATOPS cautions that this warning might happen between -0.5G and +0.5G. Given the instantaneous nature of the light, and the fact that it immediately went out with increased G, 1stLt. Wellons did not suspect anything wrong.

During the last engagement, while in a flat scissors at 12,000 feet MSL, 1stLt. Wellons found himself in a nose-up attitude (60 degrees), with rapidly decreasing airspeed. To avoid going ballistic, he rolled 60 degrees to the right and pushed forward stick, experiencing zero-G for a few seconds. During this zero-G, the fuel-boost light came on. The engine immediately flamed out.

At this point, the Skyhawk was 30 degrees nose down and 150 KIAS. As he scanned his instruments, 1stLt. Wellons verified that the engine had flamed out and went through the NATOPS emergency procedures. The engine relit, and he recovered at approximately 8,000 feet MSL. He then made a straight-in approach and an arrested landing at NAS Meridian.

Investigation showed that the fuel-boost pump had been wired incorrectly. It was providing fuel to the engine at about one-half the correct output pressure.

Capt. Mowery
and Maj. Saunders

BZs require an endorsement from the nominating squadron's CO *and* the appropriate CAG, wing commander or MAG commander. In the case of helo dets, the CO of the ship will suffice. A 5-by-7-inch photo of the crew by a squadron aircraft should also accompany the BZ nomination. Please include a squadron telephone number so that we can call with questions.

HMLA-169

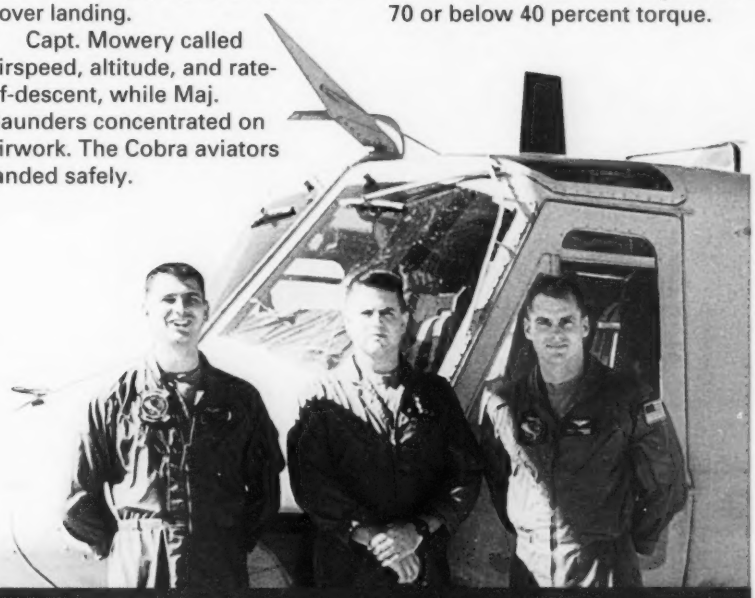
Maj. Michael L. Saunders, USMC
Capt. Samuel P. Mowery, USMC

During an NVG mission, Maj. Saunders (PIC) and Capt. Mowery (copilot) felt binding in their AH-1W's collective. They told their wingman and immediately began controllability checks. They discovered that the collective movement was limited to 40-70 percent torque.

As the section flew toward MCAS Futenma, the wingman declared an emergency while Maj. Saunders and Capt. Mowery prepared for a no-hover landing.

Capt. Mowery called airspeed, altitude, and rate-of-descent, while Maj. Saunders concentrated on airwork. The Cobra aviators landed safely.

Postflight revealed that the collective friction collet had worn grooves in the mast, preventing the collective from moving above 70 or below 40 percent torque.



Capt. Williams, USMC;
Sgt. Twiddy, USMC;
and 1stLt. Kowarsch, USMC

HMLA-367

Capt. Rick Williams, USMC
1stLt. Kreg Kowarsch, USMC
Sgt. Kenneth Twiddy, USMC

As Dash 4 of a day division-ordnance mission, Scarface 98's crew saw a master-caution light, heard the warning horn for low-rotor rpm and saw that the rpm was decaying. 1stLt. Kowarsch (copilot) immediately lowered the collective to begin an autorotation and regain his rotor rpm.

Capt. Williams (HAC) scanned his instruments and caution panel and determined that they had lost the No. 2 engine. He took control and started a left turn to enter the windline while 1stLt. Kowarsch ran through single-engine emergency procedures.

While in the turn, the Huey crew found they could maintain level flight, but because of high, hot and heavy conditions, an undetermined problem with an engine, and lack of a suitable LZ, the HAC continued his approach to a slide-on landing. They thought about jettisoning the live-ordnance pods, but decided they didn't have to.

During the final approach, Sgt. Twiddy (crew chief) called obstacles in the initial zone and guided Capt. Williams to a more suitable lineup.

Slowing past minimum single-engine airspeed, Nr again started to decay. Capt. Williams landed, touching down over 35 knots to maintain rotor rpm.

Postflight inspection showed that the engine-driven fuel pump had failed, causing fuel starvation to the No. 2 engine.

Aguinaga, Packard and Fox (L to R)

AN Yolanda Aguinaga
AN Leigh A. Packard
AMH1(AW) Clifford R. Fox
VRC-40

During preflight, AN Aguinaga, a plane-captain trainee, noticed a fire bottle on the flight line wasn't fully charged. She exchanged it for a properly serviced bottle.

During a turn-up of No.1 engine, smoke and fumes billowed out from the APU; there was no fire-warning indication in the cockpit. The plane captain, AN Packard, signaled the crew that there was a fire in the APU compartment. The pilots tried to fire the APU's fire bottle, but it failed to discharge. AN Packard signaled for shutdown and told the crew to evacuate.

Once the crew was safely out of the aircraft, AMH1(AW) Fox, the QA rep, extinguished the fire with the flight-line fire bottle. All three Sailors remained on station to ensure a path of escape for the aircrew.

Pfc. John W. Koester, USMC
VMFA-122

Doing a turnaround inspection on an FA-18A in Yechon AFB, ROK, Pfc. Koester discovered a broken retention bolt on the starboard landing gear's forward planing-link. The bolt's first quarter-inch was missing — the threaded part that secures a locking key and nut.

The bolt was held precariously in place by tension from the planing link. If Pfc. Koester hadn't noticed the broken bolt, it could have fallen out during takeoff or landing rollout and caused the planing-link to fail.

Pfc. Koester only recently completed FRAMP training and was working on his plane-captain qualification. Since his find, two more planing-link bolts on other aircraft have been found with cracks in the same area as the one that failed. Pfc. Koester's discovery alerted aircrew and maintenance personnel to pay particular attention to this item on preflight and turnaround inspections.

AMSAN Cruz Garcia
VA-52

AMSAN Garcia was preparing NL 504 to launch from USS *Kitty Hawk* in support of Operation Southern Watch. During his inspection, he thought he saw cracks around the base of the starboard engine's total-temperature probe.

Cracks on the base of the probe are rare and extremely difficult to see. An undetected crack could cause the probe to fail and FOD the engine. He reported the discrepancy to maintenance control.

Further inspection confirmed the cracks, and the squadron replaced the probe. AMSAN Garcia prevented serious damage to an engine and averted an in-flight emergency.

BRAVO ZULU

Cpl. D.R. Sink, USMC
HMM-266

While TAD to a weapons-and-tactics course for instructors from his parent squadron, Cpl. Sink, a CDI, was inspecting the torque of an aft rotor head on a CH-46E. Cpl. Sink, using the 18-inch rule, noticed excessive play in the aft rotor's flight controls.

Further inspection revealed an incorrect lateral rigid-link (P/N 107C2657-8) installed in place of a -6 link. This switch damaged the rigid-link, the aft lateral-input bellcrank, and the aft lateral-differential bellcrank.

Cpl. Sink prevented a failure of the aft rotor and subsequent in-flight emergency.

AE3 Bobby D. Engram
VFC-12

While doing pre-launch checks on a turning Hornet, plane captain AE3 Engram noticed fuel venting from the port and starboard vent masts. Compounding the problem, another Hornet was turning up with its exhaust blowing the vented fuel

forward along the top of the wings toward the intakes of AE3 Engram's plane. Petty Officer Engram gave the pilot the emergency signal to secure both engines and manned a Halon fire bottle. The pilot killed the engines and left the aircraft.

This occurred on a det where ramp space was restricted and the planes packed together. The aircraft were perpendicular to one another; the exhaust of one blew at the exhaust of another. At the time of shutdown, JP-5 was six inches from the intakes.

ATAN Joe L. Ross
VQ-6

On a Friday afternoon at the end of his shift, plane captain ATAN Joe Ross was doing a turnaround inspection on a Viking. Inspecting the exhaust area of the starboard engine, he discovered a fourth-stage, low-pressure-turbine blade had shifted 3/16 of an inch at its outer shroud.

ATAN Ross told his supervisor about this discrepancy. The supervisor determined the engine would have failed. The ES-3A has a narrow thrust-to-weight ratio for single engine, positive-climb rate. If an engine fails during takeoff, the situation could become critical in seconds.

Designated a plane captain just one day earlier, Airman Ross averted an in-flight emergency and further damage to a $900,000 engine and a $92 million aircraft.

Sgt. Brian Allen Brindle, USMC
VMGRT-253

While inspecting the No. 2 engine on a C-130, 1st-Mech student Sgt. Brindle found a hairline crack on the turbine's rear-bearing support. The crack ran 21 inches along the support on the inboard side. Sgt. Brindle reported his find to his flight-engineer instructor, who grounded the flight.

The squadron inspected a second aircraft and found similar damage. Cracks such as these cause TFOA. Two feet of tailpipe would have been lost had the aircraft launched and the bearing support broken. In that case, the pilot would have had to do an engine-emergency shutdown in flight.

AE2 Reuben Flowers
VR-52

A C-9 went down just before a Sunday-night airlift. AE2 Flowers helped the crew chief preflight a replacement aircraft while working against field-closure time and approaching weather. The crew chief discovered an inoperative engine-nacelle light (mandatory for night flight).

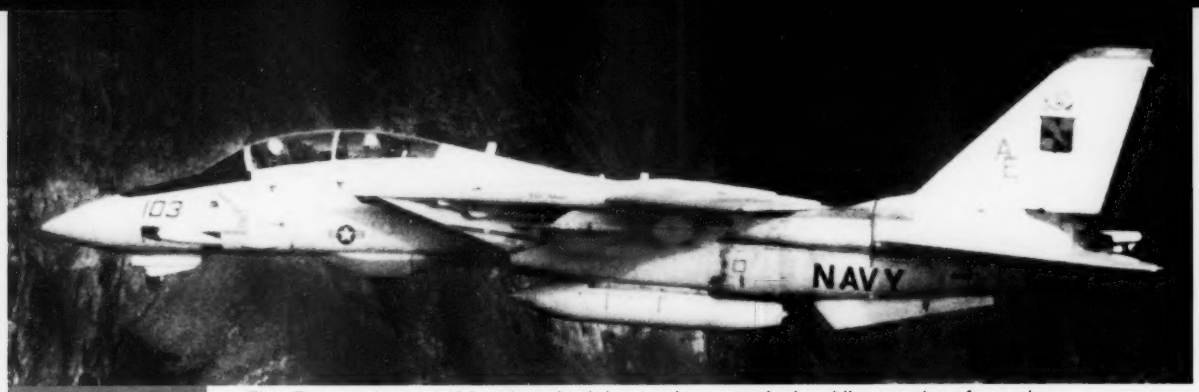
After he fixed the light, AE2 Flowers stowed the ladder in the aft cargo compartment. He noticed fluid dripping off the inboard section of the wing. He found the access panel to the boost pump on the starboard main fuel tank to be the source of the leak. The panel screws had backed off and the sealant had given way because fuel in the full tank had expanded on this 100-degree day.

The panel is in line with the No. 2 engine. Had the leak continued, raw fuel would have been ingested into the engine intake and caused an explosion or fire. We all know the 18-inch rule, but this discrepancy was eight feet from AE2 Flower's work area.

AT1 John Wojtasiak
VFC-12

During a multi-aircraft launch, AT1 Wojtasiak spotted a 1-by-2-inch piece of metal on the flight line, about 15 feet behind the tailpipe of an FA-18. Suspecting the stray metal may have come from the engine section of an aircraft, he quickly told maintenance control and QA. A mech QAR identified the piece as part of the afterburner liner of a Hornet. A one-time inspection of all engines revealed the source as an aircraft being prepared for the next event. The engine had a cracked afterburner liner, metal erosion and pieces missing well beyond limits.

AT1 Wojtasiak's timely response prevented an in-flight emergency.



This Tomcat has an old-style paint job sporting a vertical red line on the aft section.

Does Dark Gray Mean Danger?

by AMH1(AW) T.L. Webb

The vertical line painted on the aft section of the Tomcat just forward of the horizontal stabilizer is the engine-turbine line. If the engine fails, turbine blades could break up and be hurled out of the aircraft at this line, endangering anyone in their path. Mechs stay clear of this area during engine start and high-power turns.

Some maintenance people refer to the line as "the tail-over-water line," which it isn't. Most people don't know what it's for. They don't associate it with danger because it's painted gray. The line was red when the aircraft was gloss gray. It is now dark gray because of the tactical-paint scheme.

According to the MILSTD 2161's tactical-paint-scheme section, all danger and rescue markings must be painted dark gray, and lettering will be painted in the base color.

This line was not referred to in F-14D publications. The only reference was an engineering order to move the line forward on the F-14D because of differences in the engines.

Personnel should be aware of these areas so they won't endanger themselves or others who don't know what the line means.

In the past, we trained our people to be aware of areas painted red because red is the international color for danger. I think it should remain on the aircraft. The tactical paint scheme could include small amounts of red and yellow, even if only the lettering was done in those colors. ◄

AMH1 Webb is VF-11 safety PO.

This F-14 has the new motif; the line painted on the aft section is now dark gray.

Analyst's Comment: The primary objective of paint is to protect exposed surfaces. Operational uses for paint schemes include camouflage and other detection countermeasures, and identification markings, such as engine-turbine lines. The tactical paint scheme Petty Officer Webb refers to is designed to reduce visual detection by matching the reflecting of surroundings.

Red, yellow or gray, knowing where warning markings are and what they mean is essential for anyone who works around aircraft. A warning mark of any color is useless unless people are aware of its meaning. Warning-marking training should be a part of your command's indoc program.
AMCS(AW/NAC) N.E. Winnett,
Naval Safety Center.

My Time as a Tumbleweed

by Lt. John A. Tekverk

I was back at sea as line-division supervisor after a six-month turnaround. I had several new people to watch and a fast-moving CQ deck. I was nervous, especially since my flight-deck experience amounted to only two months on last cruise and two days since then.

I was standing behind the foul line near the starboard cat, just forward of No.1 elevator. ~~An E-2C~~ taxied in front of me toward the cat. JBD No. 1 was down and the Hawkeye was almost in the shuttle. One of our troubleshooters, standing between and slightly aft of JBD Nos.1 and 2, signaled me to come over. In my rush to get to him, I stepped forward to cross the foul line behind the Hawkeye. As I moved toward the checkered shirt, JBD No.1 came up and the Hawkeye powered up. This was more than enough to make my day.

I went from vertical to horizontal before any part of my body touched the flight deck. I was more than 2 feet off the deck and flying through the air. If I had been wearing a cape, I could have briefly doubled as Superman. He always lands on his feet. Unfortunately, I landed on my upper body. In a split second, I went from standing on the deck to rolling down it at high speed. Bystanders who saw my unplanned gymnastics display said I looked like a tumbleweed in a Texas tornado. To make matters worse, I was rolling toward a second Hawkeye sitting between elevators 1 and 2 and pointed directly at me. The pilot of the second Hawkeye shut down the starboard engine, the side I was headed toward.

I grabbed the small space between the flight deck and elevator 1 with my left hand. I searched for a padeye with my right hand but couldn't find one. I was in a bad spot, just 7 feet from the second Hawkeye. Finally, the first E-2C took its cat shot, and I got on my feet. Only my pride and one slightly scuffed flight-deck boot were damaged.

The propwash of an E-2C in tension will overpower you even if you're behind a JBD.

Had I missed grabbing the space between the elevator and deck edge, I would have ended in or under the second Hawkeye's spinning propeller. Although the pilot reacted quickly by shutting down the engine, the propeller was still spinning even after I jumped back on my feet.

We need to respect the E-2C's prop wash. Its engines push a tremendous amount of air over and around the JBD. Next time I'm needed on the other side of a turning aircraft taking tension, I'll wait until it launches before I cross over. ◄

Lt. Tekverk is ASO for VS-29.

It Picked Me Up!

It Picked Me Up!

by LCdr. Tom Ganse

January in Lemoore–cold, damp, foggy, dark and dreary. Post-holiday let-down. Operations and maintenance are routine and mundane until one of your mechs gets pulled through a turn screen during a high-power turn.

Most of the squadron had already begun a three-day weekend while night check finished up a few tasks, one of which required a high-power turn with afterburner shots. I had just settled in at home, ready to pop a cold one, when the phone rang. Information was sketchy—something about a mech losing his flashlight down an intake during a high-power turn and getting hurt. It was time to earn some of that 24-hours-a-day pay.

The mech, whose job was to watch for ice building up on the inlet screen, had gotten too close and was pulled up through the nylon mesh. As his flashlight, arm and cranial (with his head still in it) tore through the mesh, he let go of the flashlight. The subsequent FOD noises alerted the turn-up operator, who saved his shipmate's life by immediately shutting down the engine. The turn-up operator relates his story.

"Two of my squadronmates and I were out to do a post-maintenance, high-power turn. I did a pre-turn after accounting for tools and equipment and instructed my ground observer on ICS to let me know if he saw ice forming on the inlet screens. The cold and fog made this a real possibility.

"He took up a spot by the outboard-wing pylon, aft of the intake. I double-checked to see him standing there, then told him over the ICS that I was going to military power. He told me the screens were still clear of ice.

"After stabilizing at military power, I told him I was going to afterburner. Approaching maximum afterburner, I heard a loud bang and saw a ball of flame shoot out of the tailpipe area. I could no longer see my observer. I quickly retarded the throttle, but even as I was doing that, I

Intakes are a stealthy and unforgiving danger.

heard a second bang and saw another ball of fire before I could get the engine shut down. As the engine slowed down below idle, I felt and heard a third bang and saw flames shooting out the intake as well as the exhaust. At this point, I regained sight of the observer, who was disoriented and staggering forward.

"He was bleeding and yelled over the ICS, 'It picked me up! It picked me up! I lost my flashlight!' The starboard engine was still idling, so I made a quick call to maintenance control to ask for an ambulance, then shut the engine down. I climbed down from the cockpit and, together with the fire watch, tried to calm the observer and administer first aid. He was bleeding from a cut above his eye and was still very disoriented when the ambulance arrived. I can't find the words to describe what went through my mind when I realized what had happened.

"I guess what I did in the cockpit this night was an instinctive reaction because of an earlier experience. About eight years ago, on the flight deck of the USS *Enterprise* during launch, the flight-deck crew was breaking down an A-7 behind me. Off to one side, a yellowshirt directed the A-7 out, then gave it a hard turn, which swung the intake right across my back. Next thing I knew, I was off my feet and in the intake.

"I don't know if the pilot saw it happening or if one of the flight-deck crew saw it coming. All I know is the engine started winding down as I held on for my life. That memory isn't likely to go away."

An investigation of this near catastrophe revealed some conflicting and confusing information in our publications. We submitted TPDRs and design changes to fix the problems. We also recommended making the inlet screen stronger. The material fixes were straight forward and simple. The harder fix was changing peoples' attitudes. Oh sure, everyone was on their toes after showing people the torn screen and letting them talk to the victim. But when we took our show on the road, the message didn't stick. As I looked at some of our own people, many of them new, I saw the sense of danger was long gone.

Intakes are a stealthy and unforgiving danger. They aren't an exhaust; you can't see how fast the air is moving. They look the same with the engine shut down as they do at military thrust. With a cranial on, you get no audible clue. The adage "If you never walk through a prop arc, you'll never get hit by a prop," has a jet-age equivalent: "If you never walk through an intake danger zone, you'll never get sucked into an intake."◄

LCdr. Ganse was safety officer in VFA-113 when this incident happened. He is now a mishap investigator and FA-18 analyst at the Naval Safety Center.

Jet-age adage:

"If you never walk through an intake danger zone, you'll never get sucked into an intake."

Eliminating Environmental FOD

by LCdr. David Kriegel

It's a hot and humid afternoon. The temperature is pushing above 95 degrees. You're a pilot and you've just released the brakes. Your 75,000-pound aircraft lumbers down the runway, barely making line-speed checks. Although sluggish at rotation, your bird gets airborne.

At 70 feet, you're halfway through gear retraction when the port engine explodes. You quickly lower the nose to gain airspeed and bank into the good engine. Keeping the aircraft a few feet off the water, you gain enough airspeed to do a slow, wide climb downwind for a single-engine landing.

Would you be upset to learn that your engine was destroyed by FOD? Sure, because it could just as easily have been *both* engines. Your bird would've had the glide path of a rock. VAQ-33 found a way to minimize that possibility.

Shaker grates stop FOD from getting to the ramp aboard vehicles.

A six-inch barrier prevents debris from blowing onto the ramp.

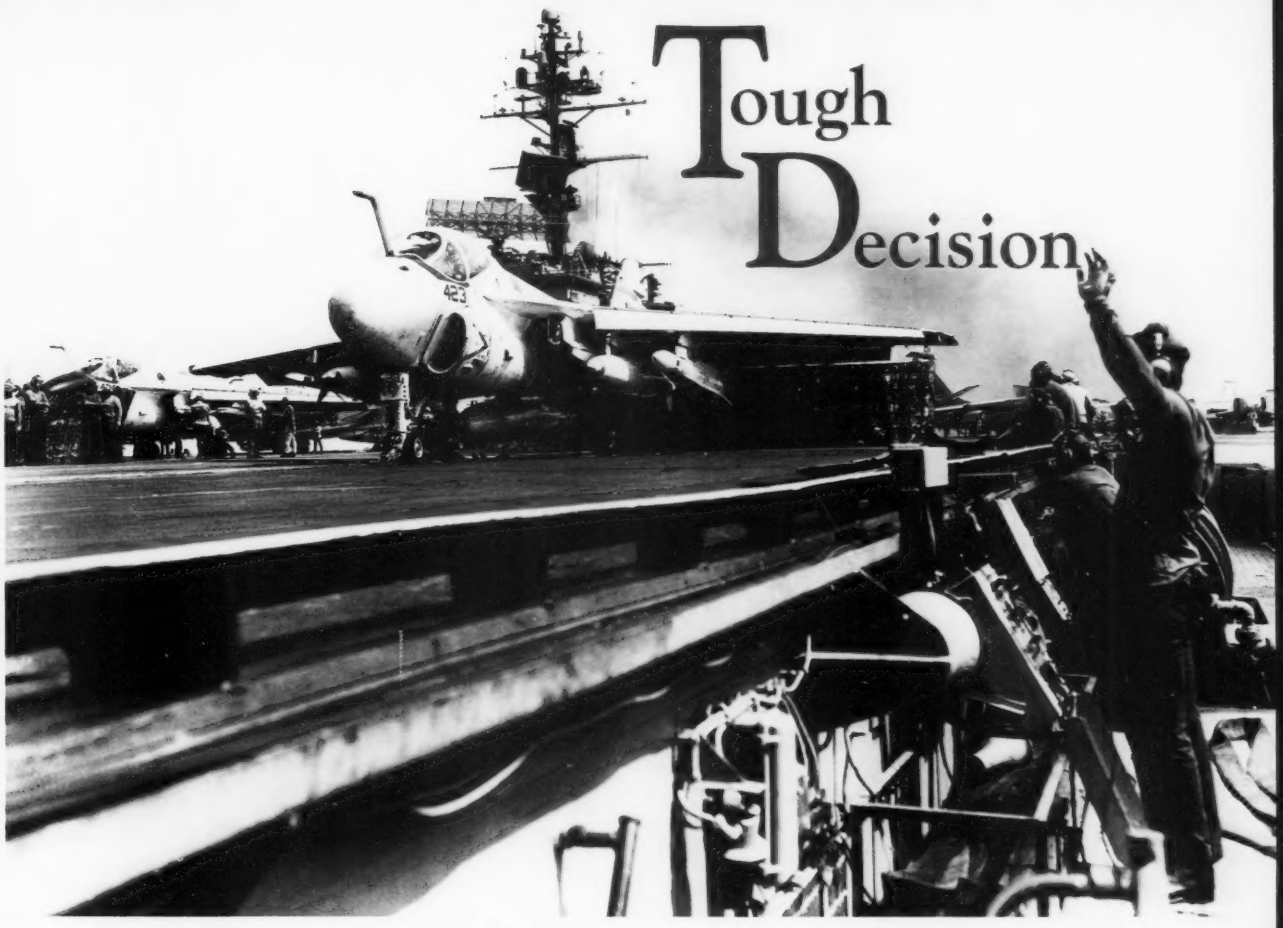
We operated two types of birds, A-6s and P-3s, in a hot climate. The fear of FOD used to keep me awake at night. Because preventive medicine is the best kind, we attacked the FOD problem with tool-control, quality-assurance and khaki participation (up through the skipper) in our morning FOD walkdowns. We almost eliminated man-made FOD.

Environmental FOD, including loose coral and other debris carried or blown onto the ramp, required special solutions. We manufactured shaker-grates out of bar stock and installed them at all ramp entrances. You couldn't drive anything onto the line without first running over a grate. We briefed our contractors on keeping their vehicles FOD-free before venturing onto the ramp and we held them accountable.

Our final solution was unique. We installed surplus concrete barriers, which we got free from the Florida Highway Department, around the ramp. County-jail inmates loaded them onto Navy trucks and we installed a mile-long barrier, six-inches high, in one morning. It stopped debris from blowing onto the ramp. The squadron had only one FOD incident in nine years before it decommissioned. ◄

LCdr. Kriegel was safety officer for VAQ-33 before transferring to the Naval War College.

Tough Decision



by AE3 Shane M. Rassel

I was the AE troubleshooter on an Indian-Ocean deployment, final checking the last event of the night on cat 2. The darkness made the job difficult.

As an A-6 approached the cat, I noticed oil on the centerline drop tank and engine-bay door. From experience and training, I knew that some oil in the engine-bay door was not a major problem since it normally indicates an over-serviced engine.

This one was different; there was a *lot* of oil, even for an Intruder. I knew it needed extra attention. I signaled the cat director and the FDC, who was standing on the safe-shot line, that the aircraft was down.

As it taxied off the cat and over to the corral, I briefed the FDC and the power-plants troubleshooter. The 'shooter jumped into action, thinking the engine was over-serviced, hoping to save the launch.

The pilot shut down the starboard engine. We drained it, refilled it, then restarted it. All cockpit indications were normal. We thought it was ready to go. However, recovery had already started; we weren't permitted to complete the launch. Feeling a little dejected that we'd missed a sortie, we went back to work recovering aircraft and finished up our shift.

Later that night, the power-plants work center decided to change the oil pump on that same engine because it had been using too much oil. During the turn-up, the rpm decayed rapidly and the engine failed.

Had we been a little faster, that Intruder might have gone flying before the engine failed. Downing it on the cat was a tough decision, but it turned out to be the best one. ◄

AE3 Rassel is a VA-196 troubleshooter.

The final checkers are the aircrews' last insurance before going into tension.

The Catwalk Broke My Wrist and My Fall!

by ATAN Adam A. Nydam and AE1 D.J. Marshall

I looked up, took one step too many, and fell over the deck-edge coaming.

What began as a routine aircraft turnaround inspection ended up winning me my first cat shot off a CV. Unfortunately, it came at a high price. I had to do it on pain pills and with my arm in a cast, but I'm getting ahead of myself.

Toward the end of our last boat det, maintenance control assigned me to do a turnaround on one of our birds. It was the last night of a simulated three-day war, and we'd been going pretty hard. Round-the-clock flight ops had left everyone tired and short-tempered. Patience was at a premium. Before beginning my inspection, I'd gotten into it verbally with another plane captain. I was still steamed when I went up on the roof.

As I went through my checklist, I couldn't stop thinking about my argument. Moving down the port side of the jet to inspect the fuselage aft of the wing, I looked up to inspect the upper half of the jet and took one step too many. I fell headlong over the deck-edge coaming into empty space and thought I was going overboard. Fortunately, the catwalk broke my fall; it also broke my wrist in two places.

Ordnancemen working on the opposite side of the bird heard me cry out and responded quickly. The crew leader had a radio and requested medical assistance. They knew I was hurt, but it was a couple of minutes before I was coherent enough to make sense and tell them where.

Medical personnel determined my broken wrist was bad enough to warrant an all-expense-paid trip off the boat to Balboa Naval Hospital. As I sat in my seat waiting for the catapult to fire, it occurred to me that I was sitting there with a broken arm because I had gone up on the flight deck not focused enough to do my job safely. I was preoccupied and it bit me hard. It took only a moment's inattention to ruin my day and put my arm in a cast for six weeks.

I'll be on light duty for a couple of months. My arm still hurts a little but not as bad as watching my fellow PC trainees become qualified plane captains while I became the light-duty go-fer. To top it off, I sure didn't get much of a chance to enjoy my first cat shot. ◄

ATAN Nydam is a PC trainee in VFA-94. AE1 Marshall is the squadron safety PO.

CROSSFEED

Cdr. M.B. Pearsall
Head, Aviation Maintenance and Material Division

AZCS(AW) Dan Steber
Editorial Coordinator

SUPERVISION

Getting a Handle on a Tool Problem

by AME1 Tedd Belcher

Only two months into the cruise and we'd already lost dozens of tools! Nobody was really sure what was happening, but something had to be done.

We checked it out and discovered that four shops hadn't lost a tool in ages, so we asked shop personnel about their techniques. Our informal survey of the work centers revealed some interesting things.

Sailors in one of our shops admitted that their workload wasn't as heavy as the other shops. They had fewer people, fewer tools and fewer tool boxes.

A shop supervisor said most of their work was done in the shop. Tool inventory here was easy. He said his shop had two places for tools, and before he could answer, his group shouted, "In your hand or in the box!"

Another supervisor said that if he saw six guys going in 12 directions, he halted production. He'd recall all the tool boxes, then hold a full tool inventory before sending them back to work.

The most successful work centers had procedures for constant spot checks on tool control. Others just found excuses. It's easy to blame ops tempo (as some did) or the attitudes of a few people (as others did). There's not much we can do to change the pace of operations, but we can ensure effective supervision, and we can try to promote good attitudes.

AME1 Belcher was with VA-52 before it decommissioned.

Wrestlemania

by ATAN Nelson and AMHAN Rodgers

Horseplay can be dangerous. I discovered this fact while wrestling with one of my shipmates in the hangar. I put a leg lock across his chest. He begged for mercy. I got up, he didn't. Thinking I had knocked the wind out of him I tried to get him up. A friend and I were able to move him about 10 feet, but no farther. I told maintenance control who called sick bay.

Sick bay told the command that my friend had suffered a fractured rib. He missed one month of work while recovering. What started out as just having fun turned into a serious accident. We didn't think about the consequences of something going wrong.

Airmen Nelson and Rodgers are assigned to the line division of HS-1.

Analyst's comment: Wrestling is best left for television. This incident shows how serious horseplay can become -- ADC Kevin Grey.

ALSS

Is the Seat Safe?

AMEC(AW) L. Beilharz

Does the maintenance chief breathe down your neck because the only important thing is getting an aircraft up for the next sortie?

You try to remember if the pins were in that ejection seat, but can't. You assure yourself that they must be because they always are. You might ask yourself, "Who is responsible to ensure the pins are installed?"

After looking through Naval Safety Center files and talking to folks in the fleet, I'm convinced we have the same problem today that we had 20 years ago. Sailors and Marines still work in aircraft whose ejection seats have not been pinned!

OPNAVINST 4790.2F directs all maintenance department personnel to get an egress check before working on aircraft. Knowing the precautions associated with your aircraft's ejection seats must be important or it wouldn't be in the NAMP.

It is your responsibility to make sure the seat is safe before you enter the cockpit.

Chief Beilharz is an analyst for aviation life-support systems at the Naval Safety Center.

LINE

Blow That Whistle!

by AMHC Buzz Harwell

Our squadron recently had a ground mishap. The No. 5 rotor blade on an H-53 struck the hangar door during a move to the flight line.

We had to replace the blade, which took many man-hours. The supervisor ordered each member of the move team to write an essay on moving aircraft in confined spaces.

After I read the essays and reviewed the members' qualifications, everyone seemed prepared and qualified. So why the mishap?

Maintenance control wanted the aircraft on the line immediately. The move director wasn't paying attention. A wing walker hesitated blowing his whistle because it looked to him like the blade would clear the hangar door. The tail walker was sure the blade would hit the hangar door, but didn't blow his whistle because he thought the wing walker would (he was walking under the blade in question). The brake rider could have signaled the director and applied brakes, but he wasn't paying attention either.

I've learned that if it doesn't look like an aircraft will clear an obstacle, it probably won't. When in doubt, blow your whistle and stop the move.

AMHC Harwell is in HM-19.

Whoa, Nellie!

by AT3 Nancy Sluis and AT3 Mary Dodson

We'd finished inspecting our P-3, but still needed to replace an antenna, op check the system and reseal the access panel.

We checked out our tools and a maintenance cart, told maintenance control we were going "in work," and headed out the door. It was a cool morning and the wind was gusting to about 30 knots. As we approached our aircraft, we noticed that the one next to ours was hooked up to three different pieces of SE.

Each maintenance cart normally has a lanyard attached to tie it to the boarding ladder. Squadron SOP is to lay the cart on its side and secure the lanyard to the ladder. This cart didn't have a lanyard, so we wedged the cart against the ladder and went to work.

We completed our op check, then radioed the shop for a CDI. It wasn't long before the CDI came out of the hangar. The aircraft next to us had started No.1 and No.2 engines. That's when it dawned on us that our cart might be loose!

We ran to the main cabin door to find that our fear had come true; the cart was missing. Suddenly, the aircraft next to us shut down. The lineman in front of that bird had a frightened look on her face. She'd seen our cart come within two feet of a turning prop.

We'd noticed the SE on the aircraft next door, but didn't think about an engine start. The lineman had noticed our cart before turning the props, but assumed it was secured to the ladder. It should have been.

Petty Officers Sluis and Dodson are in VP-30.

Liquid FOD

by Lt. Thomas C. Popp

Yellowshirts towed a C-2 to a waist cat for the first launch of the day. Suddenly, someone blew a whistle as the Greyhound slid toward an E-2C parked inboard of the superstructure.

In four seconds, the C-2 moved 15 feet, stopping just shy of the Hawkeye. The flight-deck crew came to the rescue and quickly chocked and chained the aircraft. This was the third such incident in four days.

The day before, a sliding FA-18 had nearly bumped wings with an F-14. Two days before that, an E-2C had skidded during its taxi to the cat. Cause of these near-collisions? FOD!

Most of us think of FOD as screws, rivets, bolts, fasteners or parts falling off aircraft. FOD is also buttons, snaps, zippers, office supplies or any such item that finds its way to the flight deck.

Liquid is a dangerous and often unrecognized FOD — small amounts of hydraulic fluid, fuel, oil, coolant and other liquids that drip from aircraft or support equipment.

The problem is much worse after a few months at sea when the non-skid has worn away. Fluids must be cleaned up immediately and drip pans, buckets or other containers used to catch leaks. Similar precautions must be taken with GSE and firefighting equipment.

Lt. Popp is assigned to VAW-114.

MAINTENANCE MANAGEMENT

Written Communication is Critical

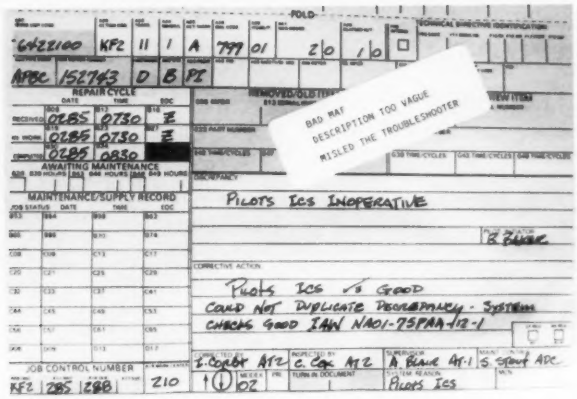
by AMCS(AW) Robin Wallace

One of the biggest frustrations in maintenance occurs when you discover you spent valuable time on the wrong job. It's even more painful when you trace the cause to poor communication brought about by information on VIDS/MAFs — or more correctly, a lack of information.

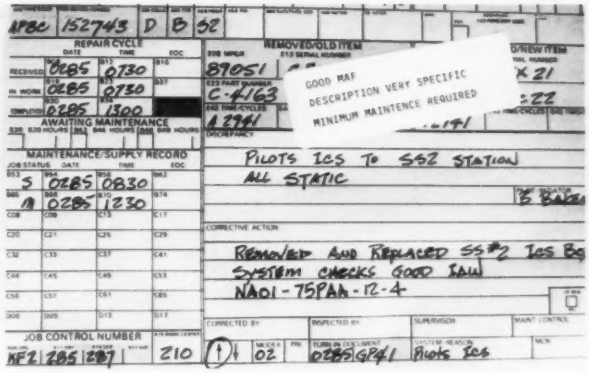
Maintenance control believes the originator means one thing, the troubleshooter reads something else into it, and both come to the conclusion that there is no discrepancy. Then the aircraft goes flying and returns with the same gripe as the previous flight. If you're lucky, the next aircrew provides more detail and writes more legibly. If they do, it's more likely that the cause of the discrepancy will be identified and repaired.

The photos show a poorly written VIDS/MAF and a more complete, concise one. Maintenance control must make sure the writing is legible and that the MAF has enough information to troubleshoot the gripe. If pilots, aircrew or maintenance personnel can't write legibly, or don't clearly describe their discrepancies, you have to bring it to their attention. Work centers are obligated to ask questions to clarify gripes. The time you spend now will save man-hours later.

Senior Chief Wallace is the command senior chief for VP-67.



A VIDS/MAF lacking specific information.



Same gripe as a more complete, concise VIDS/MAF.

Class C Mishaps Are Still with Us

by AZCS(AW) Dan Steber

There were 27 Class C ground mishaps from May '95 to December '95. Those incidents cost $1,113,433. Here are some of the mistakes that got us in trouble.

•A flashlight left in the port intake during preflight was ingested by the engine of an FA-18.

•The port wing of a C-2 was damaged by a recyclables truck whose driver tried to drive under the wing; $104,400 damage. We lost money on this recycling program.

•A No. 3 JBD raised into an A-6 radome. The safety observer cleared the JBD of the Intruder's tow bar, but didn't ensure the nose was clear.

•During night CQs, a Tomcat taxied over an airman's foot and crushed it.

•A lineman fell off a Prowler and broke an elbow. He didn't have the aft cockpit open according to maintenance instructions. Another Sailor slipped off an E-2C during an aircraft wash and broke his jaw. He wasn't using a work stand or safety harness.

•Seven aircraft taxied into work stands, fire extinguishers, the island structure of an aircraft carrier or other aircraft.

Risk assessment and management backed up by hands-on, ground-crew-coordination training can prevent these kinds of mistakes.

AZCS(AW) Steber is the editorial coordinator for Crossfeed *and a maintenance analyst at the Naval Safety Center.*

Take Pains to Package Your CAINS

by Mr. L.T. Heffern

Damage to CAINS hardware during shipping costs the Navy a lot of money and is a long-standing problem. People don't use approved containers when packaging inertial-navigation systems. CVs are the worst offenders. They simply don't have the space to store the large outer containers.

The design of shipping containers for CAINS hasn't changed in 10 years. INUs shipped in make-shift containers get damaged during shipment and fail too quickly. The components most likely to fail are gyros and accelerometers. The cost of damage ranges between $6,000 - $18,000 for gyros and $3,000 - $4,000 for each accelerometer.

Letters, messages, speeches and written instructions have had no measurable effect on this problem. Please use the approved containers on the following list. Your efforts will provide a more reliable component and save the Navy money.

Mr. Heffern works at the Naval Aviation Depot, North Island.

Component	ASO Shipping Instruction	Inner Container	Outer Container
ASN-90 GIMBAL	15461	6KH8145-01-131-0522	6KH8145-01-016-3452
ASN-92 IMU	15446	1RM8145-01-016-3445	6KH8145-01-016-3452
ASN-130A PFORM	15597	6KH8145-01-185-4878	6KH8145-01-016-3452
ASN-130A INU	15345	(See Shipping Instruction)	6KH8145-01-080-6707

ORDNANCE

A Man Died That Day

by AO1 Carl Rebant

The other day, as I walked into my shop, I overheard one of the new airmen complaining about how much longer it took to do jettison checks using a checklist. I heard one of my junior crew leaders reply, "Don't worry about it. Once you get familiar with the checklist, you won't need it anymore."

Even though I wanted to jerk the crew leader out of his boots, I sat the new airman and the crew leader down to tell them about a terrible incident that happened in one of my squadrons. It still gives me chills up and down my spine.

It was a beautiful, warm southern California day. Spirits were high, and the squadron was well on its way toward winning a third straight Battle "E." Petty Officer Jones, a recent AO2 selectee, was ecstatic! His wife had just called from medical to say they were going to have their first baby.

Meanwhile, aircraft 210 had landed with some radar gripes. Maintenance control wanted the aircraft for an upcoming mission. The ordies were out on the line downloading missiles. PO Jones was assigned to do jettison checks on 210 when the AQs were done troubleshooting the radar. He was anxious for an early secure to celebrate with his wife, but work was work.

Forty minutes later, the aircraft was ready for PO Jones. An AO3 was still in the shop. With a secure on his mind, PO Jones couldn't see waiting around for a more experienced person to help with the checks. He also thought he could save time not using the checklist.

With power applied, he directed the AO3 in the cockpit to select jettison. Since the checklist was not being followed, the cartridges had not been removed from station 2. The cartridges ignited and blew the breech clear out of the rack with the velocity of a missile. The only thing in its way was PO Jones.

A man died that day, a man with hopes and promises. If you can tell me why he didn't go by the checklist, why an intelligent ordnanceman had to die, I'd like the answer. PO Jones is the reason I always use a checklist. Do you use yours?

AO1 Rebant is the ordnance-branch supervisor for VF-21.

Naval Safety Center Gets New Telephone System

The Naval Safety Center has switched to an automated-attendant phone system that improves call routing and adds voice mail. You can reach a staff member by dailing **(804) 444-3520 (DSN 564)**, followed by a 4-digit extension, searching by name, or following a "call tree" to the desired function.

CODE		COMMANDER	EXT#
00	COMMANDER	RADM FRANK M. DIRREN, JR., USN	7003
001	ADMIRAL'S AIDE	LT JAMES IMANIAN, USN	7001
02	EXECUTIVE DIRECTOR	WILLIAM J. MOOBERRY	7005
004	PUBLIC AFFAIRS OFFICER	LCDR KEN SKAGGS, USN	7245
	AVIATION SAFETY PROGRAMS		
10	DIRECTOR	COL ROGER DOUGHERTY, USMC	7225
10A	ASST DIRECTOR	CDR DANNY WALKER, USN	7266
101	EXECUTIVE ASSISTANT	JOHN CATALDO	7226
	• FAX DSN 564-7049 •		
	AIRCRAFT OPERATIONS DIVISION		
11	DIVISION HEAD	CDR ROBERT COYLE, USNR	7203
11A	ASST DIVISION HEAD	CDR MICHAEL BLANCHET, USN	7210
11B	ASST DIVISION HEAD	CDR EARL BYERS, II, USN	7224
111A	F-14 CFIT	LCDR MARTIN LEDGER, USN	7211
111B	F/A BR HD, QF-4, UAV, A-SE, EA-6B, ARSAG, NVD	LCDR JERRY SEAGLE, JR., USN	7215
111C	FA-18, F-5, T-38	CAPT PETER JAQUES, CAF	7214
111F	AV-8B	CAPT MICHAEL KRAFT, USMC	7216
111G	A-6E/EA-6B	LCDR MICHAEL PRUITT, USN	7213
112A	E-6A, NTPS/NAWC, RISK MGMT	CDR KATHRYN OZIMEK, USN	7277
112B	S-3, T-2, A-4, T-45	LCDR JAN MYERS, USN	7274
112C	P-3, C-12, T-44, T-34, TC-4C	LCDR DAVID MORTON, USN	7273
112D	E-2C/C-2	LT CLAYTON KEMMERER, USN	7272
113A	H-3, H-53, H-60	LCDR CHRISTOPHER SPAIN, USN	7208
113B	H-2, H-60	LCDR MICHAEL BURAN, USN	7209
113C	AH-1, UH-1, H-57, V-22, NVD	CAPT JOHN PITCHFORD,USMC	7207
114D	AIR TERM, ALRE	ABECS ROYLN ROBINSON, USN	7279
114	AIR OPS BRANCH HEAD	LCDR LAVERNE STELLA, USN	7281
114B	ATC ANALYST (COMMAND MASTER CHIEF)	ACCM(AW) JEFFERY WATSON, USN	7282
	AIRCRAFT MAINTENANCE and MATERIAL DIVISION		
12	AIRCRAFT MAINT and MATERIAL DIVISION HEAD	CDR MORGAN PEARSALL, USN	7204
12A	AIRCRAFT MAINT and MATL ASST DIV HEAD	CDR JAMES O'DELL, USN	7265
122	AVIATION LIFE SUPPORT SYSTEMS BRANCH	LT BARRIE HARTLEY, RN	7289
122A	ALSS ANALYST	PRCS(AW) MICHAEL BECK, USN	7288
122B	ALSS ANALYST	AMEC(AW) LAWRENCE BEILHARZ, USN	7287
123	ANALYTICAL DATA BRANCH	AZCS(AW) DAN STEBER, USN	7269
123A	DATA ANALYST	AZ1(AW) JOANNA COMERFORD, USN	7290
124	SUPPORT EQUIPMENT BRANCH	CWO3 WALLACE BRINKLEY, USN	7293
124A	SE ANALYST	ASCM(AW) EMMANUEL DIMAANO, USN	7291
125	AVIONICS BRANCH	CWO4 WAYNE BLANKS, USN	7278
125A	AV ANALYST	AECS KEITH PARKER, USN	7275
127	AIRFRAMES BRANCH	LCDR AARON MANN, USN	7220
127A	AF ANALYST	AMCS(AW) JAMES HAMM, USN	7217
127B	AF ANALYST	AMCS NORMAN WINNETT, USN	7219
127C	AF ANALYST	SSGT WILLIAM CHAMBERS, USMC	7292
128	POWER PLANTS BRANCH	CWO5 TEDDIE GREGORY, USMC	7223
128A	PP ANALYST	ADCS(AW) CLAUDE LAIRD, USN	7218
128B	PP ANALYST	ADCS(AW) RONALD ALBERT, USN	7206
128C	PP ANALYST	ADCS JOVENCIO ESPERANZA, USN	7205
	STATISTICS and MATHEMATICS DEPARTMENT		
60	STATISTICS and MATHEMATICS DEPT HEAD	MICHAEL BOROWSKY, PhD	7182
	MEDIA and EDUCATION SUPPORT DEPARTMENT		
70	MEDIA & EDUCATION SUPPORT DEPT HEAD	CDR JOHN MAHONEY, USN	7243
70A	EDITOR IN CHIEF	DEREK NELSON	7244
71	AVIATION PUBS/DIV HEAD/APPROACH EDITOR	LCDR KEN SKAGGS, USN	7245
711	MECH EDITOR	JOE CASTO	7247
712	ASSOCIATE EDITOR	PETER MERSKY	7257
713	ASSOCIATE EDITOR	BUD BAER	7246
72	SURFACE/SHORE/PUBLICATIONS DIV HEAD	LT RAYMOND BENO, USN	7255
721	FATHOM EDITOR	KEN TESTORFF	7251
722	SAFETYLINE EDITOR	VIRGINIA RAE MACK	7253
74	DISTRIBUTION	GINGER RIVES	7256

• FAX DSN 564-6791 •

Computer Bulletin Board (BBS) (804) 444-7927, 5857, 5092 (DSN 564)

"Moonlighters Over Ubdina"– VMFA(AW)-332 Hornets attack an airfield in Croatia on November 21, 1994. Artist: *Mark Styling*